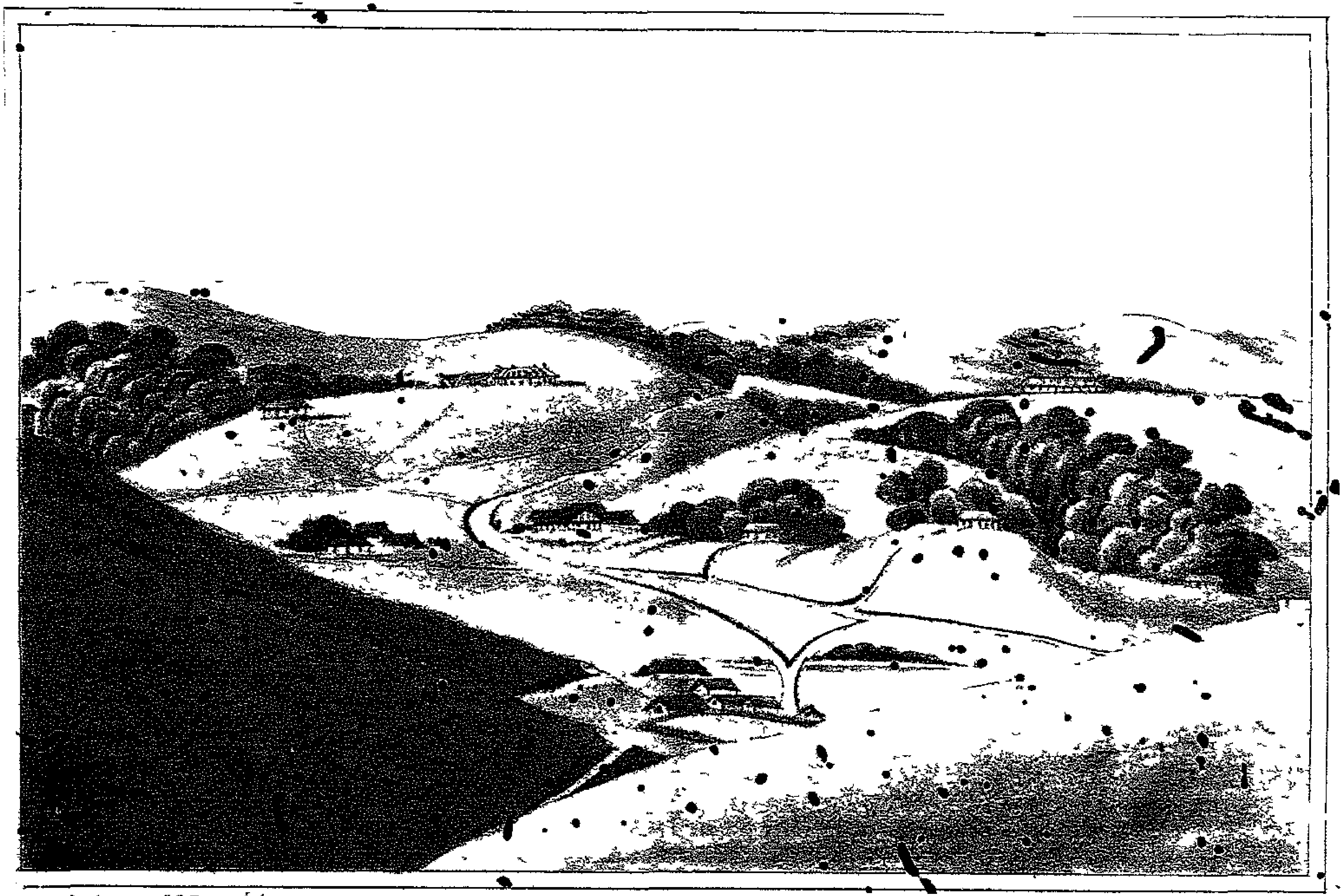

J B Tassen lith.

Drawn on Stone by J Bennett

OBSERVATIONS
ON
THE NEILGHERRIES,

INCLUDING AN ACCOUNT OF THEIR
Topography, Climate, Soil & Productions,
AND OF THE
EFFECTS OF THE CLIMATE
ON
THE EUROPEAN CONSTITUTION:

WITH MAPS OF THE HILLS AND THE APPROACHES TO THEM,
SKETCHES OF THE SCENERY, DRAWINGS OF THE PRINCIPAL BUILDINGS, TABLES OF ROUTES, &c.

BY R. BAIKIE, ESQ. M. D.
Late Superintending Medical Officer on the Neilgherries.

EDITED BY
W. H. SMOULT, ESQ.

Calcutta:
PRINTED AT THE BAPTIST MISSION PRESS, CIRCULAR ROAD.
1834.

IMPE BRARY
30 NOV 04

PREFACE BY THE AUTHOR.

THE object of the Author of the following pages has been, by a simple statement of facts, to attract attention *to a circumstance of which, he has reason to believe,* a great majority of the Indian public is not aware; namely, the existence of an elevated tract of country, with a climate completely European, situated within the heart of our own dominions in Southern India, and accessible from almost every part of the three presidencies. In pointing out the advantages to be derived from a judicious use of the climate of the Neilgherries*, both in the cure and prevention of Indian diseases, he has taken experience for his guide, resting nothing on theory, and enabling his readers to judge for themselves as to the justice of the conclusions he has drawn.

The Author feels assured that he has nothing to fear from the criticism of a candid, and enlightened public on the facts and opinions he has ventured to submit to them; but he would entreat their indulgence for the many glaring deficiencies which they cannot fail to perceive in the style and arrangement of this little treatise; deficiencies, which want of leisure, from constant professional occupation, forbids his attempting to supply, even if his inexperience in the art of composition would permit of his doing so with judgment and success.

---

* Properly Nilgiris, from the Hindoo words Nil, (blue,) and Giri, (a mountain.) The usual effect of the atmosphere is to invest distant hills with a blue tint.

It only remains for him to offer his acknowledgments to several friends, who have afforded him their invaluable assistance in preparing this little work for the press; in particular to W. H. SMOULT, Esq. of the Supreme Court of Calcutta, who suggested the plan, and has kindly undertaken to furnish the Maps, Routes, and Drawings, and to superintend the printing and correction; to Baron HUGEL, for his valuable paper on the Botanical Physiognomy of the Hills, inserted in the body of the work; and to the Rev. Mr. SCHMID, for his copious catalogue of Plants in the Appendix.

Ootacamund, 17th October, 1833.

PREFACE BY THE EDITOR.

THE conflicting accounts which the Editor received from persons to whom he addressed himself for information, when he was projecting a visit from Madras to the Neilgherries, both in regard to the difficulties of the approaches to them, and in regard to the accommodation afforded to travellers, and the number of servants and other things requisite for a temporary residence at Ootacamund, suggested to him the idea of soliciting the author of the following sheets to compile an account of the Hills, and to embody in it statements in reference to the points in question, on the accuracy of which complete reliance might be placed. That Gentleman, he was satisfied, was the person best qualified, both from long experience and from being possessed of every species of information respecting the Hills, to draw up such an account of them as would be practically useful; and he feels assured that the work which, in compliance with his suggestion, has been produced, will not only prove a valuable guide to those who may resort to them in pursuit of health, but will be perused with interest by the general reader, as it conveys, in a simple and unpretending style, a faithful view of the climate, scenery, productions, and capabilities of a tract of country which is so luxuriant and salubrious that it may be justly said to form an Oasis amidst the arid plains of India.

The collection of the Maps, Routes, and Drawings has cost the Editor no little trouble. Such, indeed, were the difficulties which he met with in his first endeavours to procure and prepare these valuable contributions, that he had nearly abandoned all hope of being able to add them to the compilation, and he was induced to persevere only by the encouragement afforded to him by the Honorable Sir FREDERICK ADAM, Governor of Madras, who, in a manner that demands his warmest acknowledgments, expressed his readiness to give him every assistance in the use of the Lithographic Department of the Chief Engineer's Office. Col. MONTEITH, of that department, and his assistants followed up, with equal kindness and ability, the instructions which from this high quarter were conveyed to them; and, though the Editor was obliged to leave Madras before he had collected all the materials which were necessary to enable them to continue their operations, and was at length reluctantly compelled to transfer the work to his own presidency, his personal superintendence in directing the labours of the Draftsmen being deemed indispensable, he received from them such information and assistance as removed the chief difficulties that had presented themselves in the outset.

The Editor's warmest thanks are also due to Major STRACHAN, Deputy Quarter Master General of the Madras Presidency, for the obliging manner in which he furnished the tables and protracted routes and afforded other information connected with his department, which he spared no pains to render as copious and complete as possible: his contributions will be found perhaps the most generally useful part of the guide to the Hills. The Editor cannot at the same time omit to return his sincere acknowledgments to Captain BUTTERWORTH, of the same department, for his exertions to have these documents furnished to him with the utmost expedition.

In returning his grateful thanks to those friends who kindly contributed the sketches and drawings, the Editor has to express his regret that justice could not be done to the exquisite pencilling of the flowers; the best executed engraving must have failed to represent the natural grace of the originals, and no other hand could have equalled their perfect colouring.

Mr. GANTZ of Madras is the artist by whom several of the drawings were made, from the sketches furnished to him by the Editor, and to him and also to Messrs. TASSIN and BENNETT of Calcutta much credit is due for the accuracy and care with which they have executed their respective parts. Lithographic drawings could not have conveyed any just idea of the peculiar character of the scenery of the Neilgherries, had they not been coloured; and the Editor ventures to indulge the hope, that the success of this first attempt to produce coloured landscapes of Indian scenery will induce others who may favor the public with accounts *of the most interesting parts of our eastern possessions to accompany them with sketches finished in a similar style.*

It may be useful to add the particulars of the expences of this publication in detail, 500 copies being executed.

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ERRATA.

Page.	Line.	
5,	9,	from bottom, *for* ' instant,' *read* ' instance.'
8,	9,	from top, *dele* the colon between ' rupees' and ' to.'
8,	9.	from bottom, *for* ' is,' *read* ' an.'
12,	15,	from top, *for* + *substitute a* *.
15,	8,	from bottom, *for* ' Southern,' *read* ' Northern.'
18,	18,	from top, *for* ' Bulgherries,' *read* ' Neelgherries.'
19,	10,	from top, *for* ' $\frac{718}{1000}$,' *read* ' $\frac{7419}{1000}$.'
21,	19,	from top, *for* ' radiation of,' *read* ' radiation at.'
32,	9,	from bottom, *for* ' 1.60 above,' *read* ' 1.20 above.'
33,	15,	from top, *for* ' congestions,' *read* ' congestion.'
36,	21,	from top, *for* ' in certain situations is,' *read* ' in certain situations are.'
36,	1,	from bottom, *for* ' bitels,' *read* ' lintels.'
39,	5,	from top, *for* ' Nelgherries,' *read* ' Neilgherries.'
42,	12,	from bottom, *for* ' Ficarrar,' *read* ' Ficarear.'
43,		note first, *for* ' grapes,' *read* ' grasses.'
43,		note second, *for* ' were,' *read* ' are.'
44,	22,	from top, *for* ' Corous,' *read* ' Corvus.'
46,	4,	from bottom, *for* ' landlarks,' *read* ' sandlarks.'
47,	1,	from top, *for* ' Mallkoondah,' *read* ' Mailkoondah.'
57,	16,	from top, *for* ' lessens,' *read* ' lessen.'
63,	15,	from top, *for* ' them as nearly,' *read* ' them nearly.'
87,		signature to bazar prices, *for* ' T. B. Doveton,' *read* ' F. B. Doveton.'
88,	20,	from top, *for* ' 978.5+7.8,' *read* ' 978.5×7.8.'
88,	4,	from bottom *for* ' are given,' *read* ' is given.'
91,		in the column " Rain, square inches" read as follow:

March,	none.
April,	2.233
May,	5.745
June,	3.880
July,	2.170
August,	4.102
September,	8.960
October,	7.300
November,	7.400

INTRODUCTORY REMARKS.

BEFORE proceeding to give a detailed description of the Neelgherries, it will probably be interesting to the general reader, and still more to such invalids as propose paying them a visit for the restoration of their health, to be presented with a condensed view of the principal peculiarities of their climate, situation, &c. which have occasioned their being selected as a place of resort for Europeans.

The Neelgherries, then, are situated in the S. of India, between the 11th and 12th degrees of N. latitude and 76th and 77th degrees of E. longitude, on the confines of the Provinces of Coimbatoor and Malabar. They are joined to the table-land of Mysoor by a narrow neck of land, but are completely isolated on every other side, and rise abruptly from the plains to the height of from 6 to 7,000 feet (viz. the table-land on the top,) the highest point, Dodabet, being 8,760 feet above the level of the sea. They are about 40 miles distant from the nearest point of the Malabar Coast, and about 230 from the sea on the Coromandel side.

There are four stations at present occupied on the Neelgherries, Ootacamund, Kotagherry, and Dimhutty, (close to each other,) and Coonoor; of each of which a short description will be given.

It is not easy to describe the climate of the Neelgherries so as to convey an accurate idea of it to a stranger, as there is no other with which I am acquainted, to which it can be strictly and analogically compared. The cold weather or Winter is like the Spring of the N. of Persia or the Autumn of the S. of France, and the monsoon is very nearly a mild Autumn in the S. of England. These two divisions include our whole year, and if I were to say that I consider it, all prejudice apart, as equal to any and superior to most of the climates I have seen in the course of pretty extensive wanderings, I may be suspected of partiality or exaggeration I shall, therefore, content myself with an appeal to facts, of the accuracy of which any one may satisfy himself by an examination of the Meteorological Tables in the Appendix.

It appears from them that the mean annual temperature of Ootacamund is 58°.68, the greatest annual range 39°, the maximum being 77°, and the minimum 38°[*], the mean annual range is *16°.84, and the mean daily range 17°.01′. The maximum power* of the sun's rays is equivalent to 21°.73′.

The quantity of rain that falls, on an average of four years, is 44.88 inches; the number of days in a year in which there is heavy *rain, 19; of showery rain or drizzle with fair intervals, 81; cloudy,* 28, and of days perfectly fair and dry, 238.

The mean temperature of Kotagherry and Dimhutty is rather more than 3° higher than that of Ootacamund; that of Coonoor, *probably six degrees warmer: less rain falls at either of these* places than at Ootacamund, and it is generally dry at both when it rains at Ootacamund, from their being affected by different monsoons.

An important feature in every place resorted to by invalids is its accessibility; we shall therefore state the distances of the Neelgherries from the principal points on this side of India, and give a succinct account of the various passes or Ghâts leading to the tableland above.

The following are the travelling distances from the principal points in the Madras territory:

1. From Madras viâ Trichinopoly, 393 miles.
2. ——————— viâ Salem, 332 miles.
3. ——————— viâ Bangalore, 385 miles.
4. From Trichinopoly, 153 miles.
5. From Bangalore, 176 miles.
6. From Calicut, 156 miles.
7. From Tellicherry, (Cannanore,) 130 miles.

The expence of travelling dâk by these different routes may be stated on a rough average as follows:

No. 1 ——— 180 to 200 rupees, all expences included.
No. 2 ——— 150.
No. 3 ——— 150 to 170.
No. 4 ——— 60.
No. 5 ——— 80.
No. 6 ——— 60.
No. 7 ——— 50.

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[*] This refers merely to the temperature of the *air*; as, on or near the ground, water freezes nearly every night for three months of the year

In marching or travelling by stages, the expence of course is pro portionally much less.

The communication with the low country is kept open by sever Ghâts, two of which are practicable for wheel carriages; these w shall shortly describe. The Coonoor Ghât, lately opened, ascend from Mootapollium, in the district of Coimbatoor, through a dee ravine, to Coonoor, on the edge of the table-land above, at presen the head-quarters of a corps of Pioneers employed in completin the Ghât. On leaving Mootapollium, the road passes across level plain, through a bamboo jungle, for three miles; the ascen then commences, and continues for nine miles; the slope at th lower part being about 1⅜ inches per foot; higher up it increases and near the top, (where the greatest difficulties occurred,) it is 2 inches per foot. The road is no where less than 15 feet wide, an it is intended that it shall be throughout 20 feet. The breadth of the belt of jungle, from its commencement to its terminatio some way up the Ghât, is only six miles—a point of considerable importance. An excellent Bungalow has been erected at Mootapollium, and a similar one at Coonoor.

From Coonoor, the road still ascends, but very gradually, till it reaches Ootacamund (the principal station)—a distance of 10 miles.

The other principal road, also practicable for wheel-carriages, ascends at the opposite angle of the hills, from Goodaloor in Mysore to Neddiwattum or Norputta; it is carried at an angle along the face of the hills, with one or two zig-zags. The ascent is only 4¾ miles, but the declivity is very great, being in most places 3⅞ inches per foot; and towards the top, where it is carried through a wood, it is exceedingly slippery in wet weather.

A still more serious objection is the breadth of the jungle through which it is carried from Mysore. The forest commences at four miles N. of Mungalum, and becoming thicker and thicker, continues all the way to Goodaloor—a distance of 25 miles; it is peculiarly dense at a place called Karkarra, nine miles short of Goodaloor; the country on each side seems to sink towards Karkarra, forming a sort of basin, the only outlet from which is in the course of the nullah which there crosses the road. This is the great road from Bangalore, and though liable to serious objections from the breadth of the belt of jungle and other circumstances, it is nevertheless constantly travelled over, and almost always with impunity; for some cautions connected with the subject, *vide* remarks prefixed to the Table of Routes, Appendix, No. 1.

There is a small Bungalow at Goodaloor, and another large one at Neddiwattum, at the top of the pass. A very good road with a slight ascent leads from Neddiwattum to Ootacumund, 17 miles.

The other approach to Goodaloor from the Malabar coast, by Mannantoddy and Sultan's battery, though carried through a jungle, or rather forest, is comparatively healthy at all seasons.

A third road strikes in at Goodaloor, setting out from Calicut; it passes by Nellamboor, through the deep jungly valley between the Neelgherries and the Tambachery hills, and ascends the Karkoor pass, 12 miles from Goodaloor; it is but little frequented, and seems to possess no advantage to entitle it to be more so.

Another road, much frequented by natives, particularly by Brinjarries, strikes off from the road between Mysore and Goodaloor, near Karkara, crosses two nullahs and the Moyar river, and ascends the hills by a short pass known by the name of the Segoor Pass, to Billycul, which is only seven miles from Ootacamund. This is only practicable for bullocks and foot passengers, and it is doubtful if it could be much improved.

From Mootapollium, the commencement of the Coonoor road, a very steep ascent by a very bad road leads direct to Kotagherry, on the eastern side of the range; it is only practicable on horseback, or in a palankeen.

There are several other points at which foot-paths ascend the hills, one at the S. E. angle of the Koondahs, much frequented by Brinjarries, called the Keiloor Pass; it descends into a very thick jungle, and leads by wild and unfrequented paths through the village of Soondapetta, to Coimbatoor and Paulghatcherry.

The only other pass which remains to be described, is the Koondah Pass, which is but little known to the public, being as yet merely marked out, and frequented by Mopilas bringing up various articles, and smuggling tobacco* down. It was marked out by my friend Lieutenant LeHardy, then of the Pioneer corps, now of the Commissariat Department, and does great credit to his skill, perseverance, and ingenuity*. It commences at Canoot, at the base of the hills on the Malabar side, and ascending through a deep ravine filled with wood, a distance of 12 miles, reaches the summit of the Koondahs, and crossing them, descends upon the central-table land of the Neelgherries, and reaches Ootacamund, 30 miles from the head of the pass. The slope is so gradual as never to exceed 1⅔ inches in the foot, and the road, owing to certain obstructions, is in many places level, in others surmounts them by short zig-zags. From Canoot, at the foot of the pass, to Arricode, on the Baypoor river, is 16 miles, and thence to Calicut, on the coast, by the river, (here navigable at all seasons for large boats,) is 28 miles. When this road is (as I hope and trust it will speedily be) fairly opened and made practicable even for bullocks, horses, and palankeens, it will doubtless soon become one of the most frequented, particularly by travellers from Calcutta and Bombay. (For some remarks on the comparative eligibility of the different roads and passes, *vide* observations prefixed to the Table of Routes, Appendix, No. 1.)

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* *The road, as now marked out, closely follows a path frequented by these* tobacco smugglers, who formerly carried on this trade to a great extent. Tobacco is grown in large quantities in Coimbatoor, but Government have a monopoly of it in Malabar, and a heavy duty is charged on it, on entering the latter province; the consequence of which is, an extensive contraband trade, principally across the Neelgherries, as being less liable to interruption. If I am rightly informed, the original discovery of the hills was owing to this circumstance; Messrs. *Whish and Kindersley, of the* Civil Service, (in 1819,) having pursued a band of smugglers up a small pass to the N. E. of Kotagherry, and thus become acquainted with the existence of a table-land with an European climate.

These observations on the access to the hills naturally lead to a short description of the principal stations, their means of accommodation for strangers, &c.

Ootacamund, the principal station, is situated nearly on the centre of the table land, about 10 miles from the southern edge of the range, and seven from the northern. It is placed directly at the base, and on the western side of Dodabet, being completely sheltered on three sides by this mountain, and only open to the W. N. W. It is elevated 7,400 feet above the level of the sea, and though the choice of the situation was in the first instant almost purely accidental, it could scarcely have been better selected, after a more minute acquaintance with the different localities. It is, as before observed, perfectly sheltered. The climate is decidedly the most perfectly European of any point of the hills, and upon the whole, less affected by the various vicissitudes of monsoons, rains, &c. than any other; it has plenty of excellent water, and wood in abundance; while the facilities of access are infinitely beyond those of any spot of similar elevation yet known.

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* The Coonoor Pass was also marked out, and in great part completed by Lieutenant LeHardy.

An artificial lake, formed by damming up the opening between *two hills, so as to produce a sheet of water nearly one and a half* mile long, and in many places 40 feet deep, adds considerably *both to the ornament and comfort of the place.*

A very excellent and nearly level road leads completely round *the lake, forming a very pleasant ride or drive of from five to seven* miles, including the windings. The roads in the cantonment, *and in fact all over this part of the hills, are excellent. It would* be perfectly practicable to enjoy a canter of 27 miles in a straight ine, *with scarce an interruption, from Coonoor to Neddiwattum.*

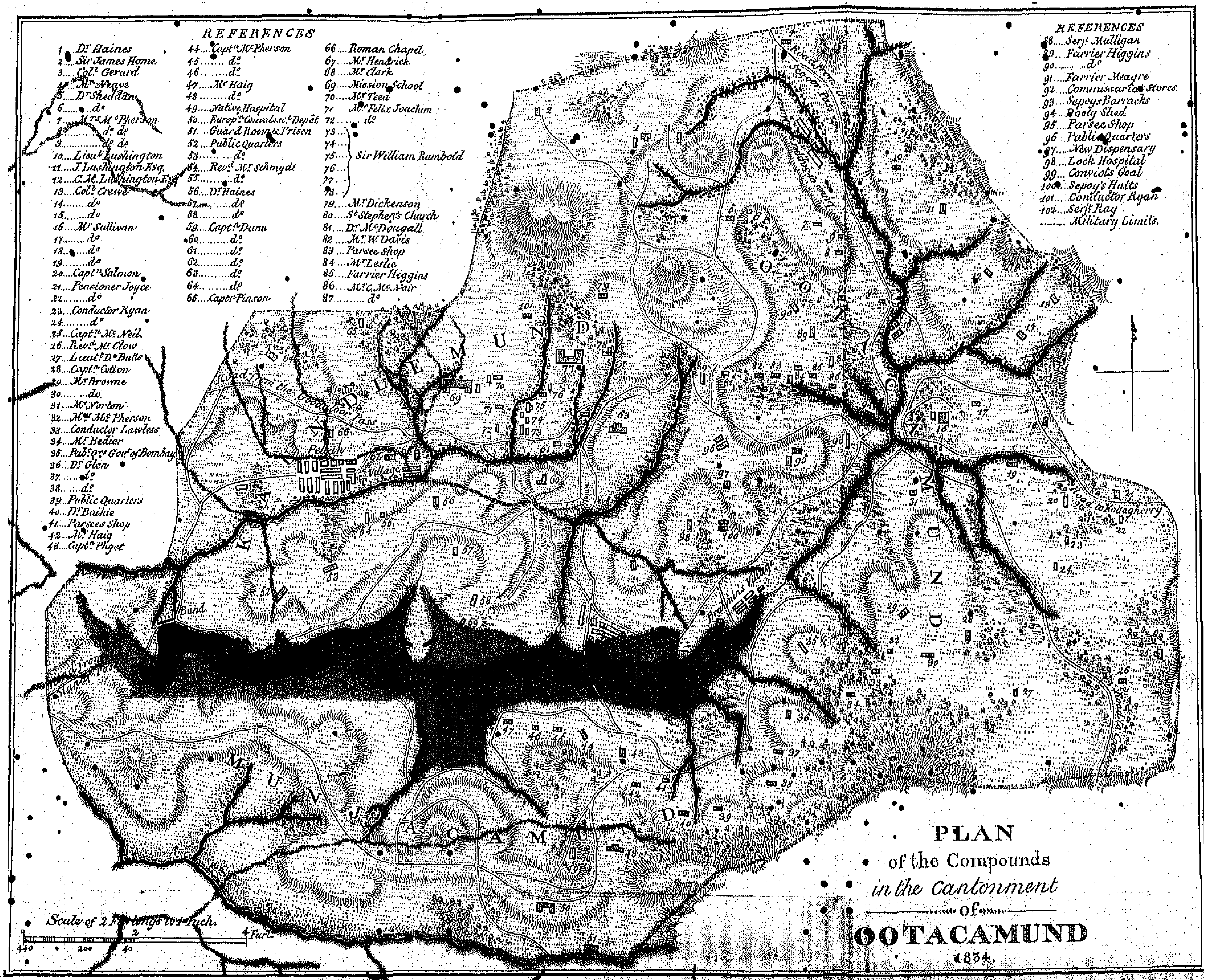
The houses composing the cantonment are generally perched on *the top of the small round hills grouped along the base of Dodabet*, or in the vallies between them, so that the time required, and the distance travelled in going from one house to another, is at least treble that in any other cantonment in the low country; added *to which, the roads leading to them are in many instances* excessively steep, and after rains slippery, so that, in wet weather, *the difficulty of moving about is considerably increased.*

There are at present upwards of 70 habitable houses in Ootacamund, of every size and description, from the palace built by Sir W. Rumbold down to thatched cottages with two or three rooms. Of these, 25 or 28 (besides Sir W. Rumbold's large house, now converted into an hotel) are in point of size and accommodation itted for the reception of large families; the others are smaller, and better fitted for bachelors or small families. During the last year here were between 120 and 140 people from the two Presidencies of Madras and Bombay resident at Ootacamund, of which from 40 to 45 were married people, with families.

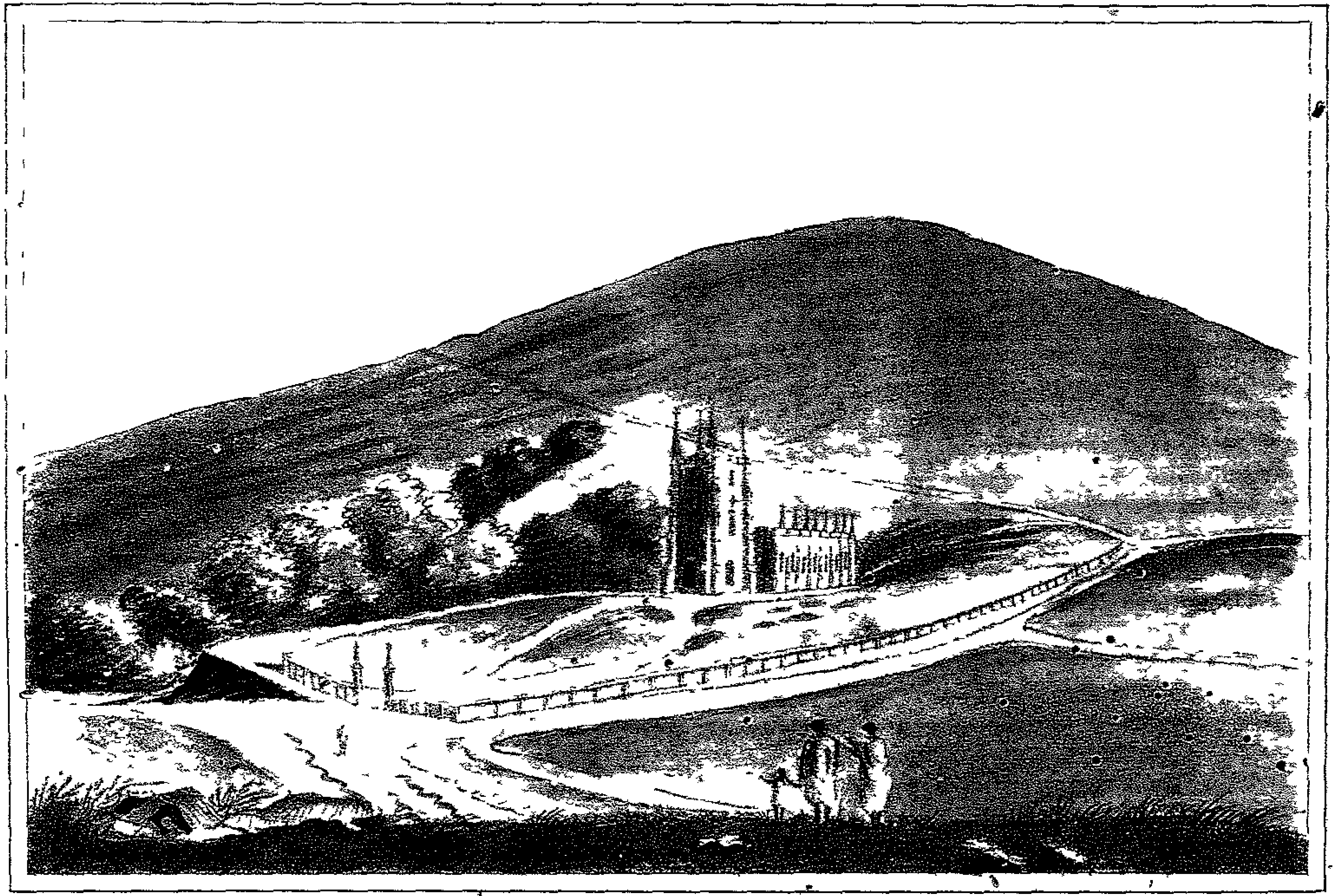
A very elegant church in the Saxo-Gothic style is one of the greatest ornaments of the place.

There are two public quarters belonging to the Madras Government, each capable of accommodating six officers; 1 Bombay ditto, lso for six officers; 1 quarter allotted to the commandant of the depôt; 1 pay-office with staff officers' quarters; a large European hospital; a jail, which holds 250 prisoners; native hospital nd lock hospital, and numerous other public buildings of minor onsequence.

A handsome building at the W. extremity of the cantonment, rected two years ago by the Church Mission Society, is appropriated as a school, under the charge of the Reverend Mr. More-

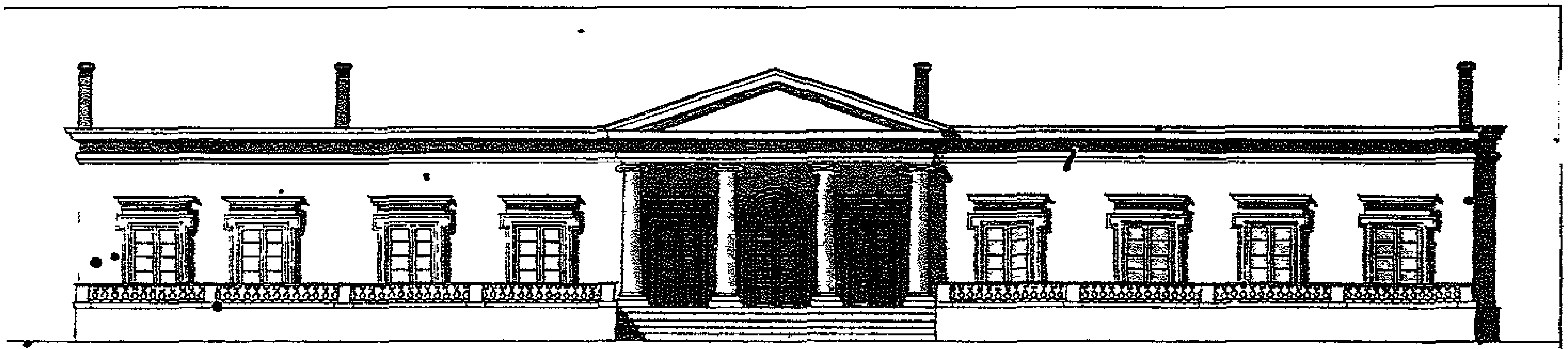


J.B. Tassin del. & lith.

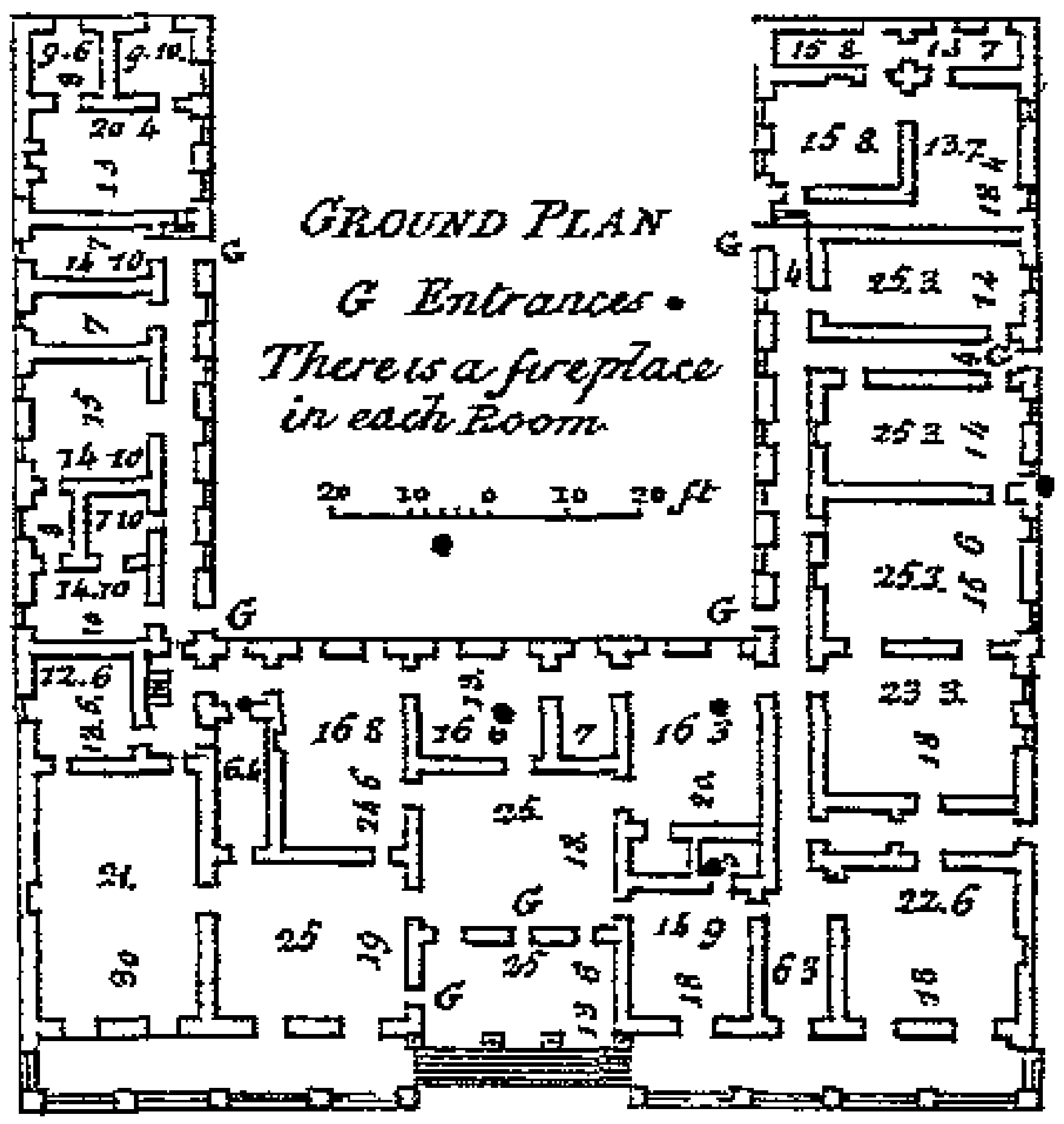


Sketched from Nature by Lieut C F le Hardy *Drawn on Stone by J Bennett*

S^T STEPHEN'S CHURCH — OOTACAMUND



Sir William Rambold's House, now used as an Hotel.



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wood. Though chiefly intended for the education of the families of Missionaries, the sons of Europeans above a certain age are admissible. *Vide* Prospectus in the Appendix.

The European hospital above alluded to is allotted for the reception of convalescent European soldiers of H. M.'s and the Company's army, who have suffered from the climate of the low country. Though laboring under certain disadvantages, it is upon the whole well adapted to this purpose.

House rent varies according to situation, extent of accommodation, &c. It is still higher than could have been wished, both as regards the nature of the accommodation and the circumstances of those occupying the houses, but is in progress of gradual reduction. The large houses, let at from 100 to 150 and 250 rupees per month; the smaller, at from 40 to 70. The public quarters are charged 30 rupees each: but are unfortunately far from comfortable, and their being grouped together forms a serious objection to their being generally occupied.

A plan is now on foot for building by subscription a number of small separate Bungalows at Ootacumund and Kotagherry, which if it succeeds will materially add to the extent of accommodation, as well as reduce the expence. *Vide* Prospectus in the Appendix.

The bazar at Ootacamund is exceedingly well supplied, and the prices but little higher than those of the low country. A material part of the accommodation in the way of supplies is furnished by two excellent Parsee shops, in which every thing in the way of liquors, Europe supplies, cheese, pickles, preserves, &c. &c. are to be found, good, and at reasonable prices.

Good men servants of every description (excepting perhaps head servants and dressing boys) are generally to be found at Ootacamund, and from being acclimatized, are probably preferable for out-door work to those from the low country, who even when well taken care of, frequently suffer at first from their own imprudence in exposing themselves, sleeping on the ground, &c. All servants who are brought up from below should have woollen clothes, and coarse flannel under-jackets, and care should also be taken that they do not sleep on the ground, for which purpose *charpaees* or country cots are useful.

Female servants are seldom to be found, and should be brought up.

It is customary to make a slight addition to the pay of servants on the hills, partly on account of their requiring more and better food, and because rice is somewhat dear. The following is the scale usually paid by residents: butler, 14 to 17 rupees per month; maty (mussal), eight to nine; dressing and waiting boy, six to seven; bearer, seven; horse-keepers, seven; grass-cutters, five; a wood cooly, at six or seven rupees: to cut wood is an indispensable part of the establishment.

Ponies are more useful and more hardy than horses, which sometimes suffer from the change. There is however every facility for riding large horses, and with proper care and warm clothing, they thrive extremely well. Gram varies so much in price, that I have latterly adopted the system of feeding mine on barley, mixed with equal quantities of gram, which keeps them in excellent condition; it (barley) may be had at 40 to 50 large seers (upwards of a Bengal maund) for a rupee. A tonjon is a preferable conveyance on the hills to a palkee, which is slow: a set of six bearers costs 43 rupees per month.

A carriage or buggy is not in general of much use; at least for those who do not intend to make a protracted stay. I have always however driven a small poney phæton, with a pair of strong Pegue ponies, which saves me a good deal of exposure in the course of my professional occupations; and as before observed, there is an excellent drive of seven miles for those who prefer this species of exercise.

The supplies to be found in the Parsees' shops are, as before observed, in general excellent and reasonable. Those who are particular as to the quality of their Port-wine and Beer, would do well to bring a small stock with them.

Some of the Bungalows are furnished, but this is unfortunately not general; most ordinary articles of furniture however, such as beds, chairs, tables, carpets, may generally be purchased on the hills; and as arrangement is easily to be made with the Parsees for • set of crockery, all that it is essential therefore to bring, is plate, bed, and table linen. A list of the prices of various bazar articles will be found in the Appendix, and it will be seen from this, that the expence of living on the hills, at least in the quiet way in which invalids ought to live, is, with the exception of house rent, not beyond what it is in the low country.

The medical staff at Ootacamund consists of a superintending medical officer; one assistant, for general duty; one in charge of the convalescent depôt, and one Bombay medical officer, for the care of sick officers of that presidency*.

It may be interesting to many persons to know that a regular Masonic Lodge has lately been established at Ootacamund, under a warrant of constitution from the Provincial Grand Lodge on the Coast of Coromandel. It is proposed to erect, very shortly, a handsome building for the meetings of the lodge; several meetings of a very pleasant description have already been held, and there is every reason to think, that the lodge will add materially to the good feeling, harmony, and sociability of society on the hills.

KOTAGHERRY contains only 12 or 13 houses, besides the quarters at Dimhutty, placed at the disposal of the public by the liberality of Mr. Lushington, and capable of accommodating six officers. There is also a deficiency of supplies, owing to the want of a regular bazar—a market being held only once a week. Both these circumstances are much to be regretted, as there are many points in the climate and situation of Kotagherry which point it out as a fitter residence for many classes of invalids on first ascending the hills than Ootacamund. A medical officer is stationed at Kotagherry, which is 16 miles distant from Ootacamund, on the E. side of the range, and 900 feet lower; it is not so well sheltered, but suffers comparatively little from the S. W. monsoon.

The climate of COONOOR, as before observed, is milder than that of Kotagherry, but it is so close to the edge of the Ghât, that it is subject to fogs at particular seasons; on the other hand, it has the advantage of being on the direct road to Ootacamund, and would make an excellent resting place for sick travellers. Being the head-quarters of the Pioneer corps, there is at present no accommodation for strangers except the public bungalow, which travellers are prohibited by the regulations from occupying for more than three days; but when the operations of the corps in that quarter are finished, six or eight very comfortable bungalows will be available.

After this very short resumé of the peculiarities of the hills, my readers will, I trust, be prepared to peruse with some interest, a more detailed account of the Topography, Climate, Soil, and Productions, &c.; to which I have added, for the information of Invalids, a succinct account of the effects of the climate on the European constitution, both sound and impaired, and on the principal diseases of India; the latter being the result of three years' experience at the head of the Medical Staff on the hills, and during which period upwards of 300 cases of various descriptions have come under my observation.

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* The Bombay officers have hitherto shown a decided preference for the Neelgherries over their own convalescent station, and are in fact among our principal supporters.

TOPOGRAPHY.

The Neelgherry hills are situated between the parallels of 11° 10′ and 11° 32′ N. latitude, and 76° 59′ and 77° 31′ E. longitude from Greenwich. Their greatest extent in an oblique direction from S. W. to N. E. is from 38 to 40 miles, and their extreme breadth, 15. Taking into account the great undulation of the surface, and the circumstance of the breadth above stated being pretty constant throughout, their superficial extent may be fairly estimated at from 6 to 700 square geographical miles.

They form the abutment or termination of the immense table land of central India, commencing with Hindoostan and the Dekkhun, and continued through Mysore, bounded on the W. by the Western Ghâts, and on the E. by the less strongly marked line of the Eastern Ghâts. From the table land of Mysore, with which they are connected by a narrow neck of land, about 15 miles wide, they rise to the height of 3,500 feet, and are divided from the E. and W. Ghâts by a deep fissure on each side, of not less than 15 miles in width; on every other side they rise abruptly from the subjacent plains of Malabar and Coimbatoor, in one vast precipitous mass, to the height of from 5 to 6 or 7000 feet. Their isolated situation, completely separated from the surrounding country, is one of the most remarkable features in their position, and may serve to account for many of the peculiarities of climate found to exist upon them.

They are composed of three distinct ranges, or groups of hills closely connected together, but which, though nearly of the same general elevation, vary considerably in their aspect, connection, and grouping.

The range to the westward, though forming a continuous line, bears two distinct names. The northern part forming a narrow line, commencing at the Goodaloor Pass, being called the Neddimulla hills; and the southern division, composing a very distinct and remarkable group, being known as the Koondahs. The central or principal range is entirely formed by a continuous chain of hills, rising gradually on each side to the summit of Dodabetta, the highest of the whole group, and the loftiest point yet discovered south of the Himalaya. The station of Ootacamund is situated directly at its base on the W. side, and it is still more important *to observe, that it forms the line of separation between the N. E.* and S. W. monsoons, the whole of the range to the W. of Dodabet, being chiefly affected by the S. W. or Malabar monsoon, and that to the eastward by the N. E. or Madras monsoon.

The division to the eastward, having received no distinct appellation, may be distinguished as the Kotagherry range, the station of that name being situated on it. It contains fewer peaks, and is inferior in elevation to either of the other two.

The annexed table† contains the elevation of some of the principal points on the different ranges, above the level of the sea, as well as some neighbouring stations in the low country. Those marked T. are taken from the Trigonometrical Survey of the hills by Capt. Ward, those marked B. from Barometrical observations by Dr. Dalmahoy and myself; *the others are merely approximative,* and require confirmation from future and more accurate observations. No point on the hills, it will be observed, is less than 700 feet above fever range, (assuming the latter to be about 4,500 feet, the limit generally assigned,) and most of them from 1,500 to 2,900 feet beyond it.

The base of the hills is completely surrounded by a belt of dense jungle of various breadth, and rising in general to the height of from 2,500 to 3,500 feet on their declivities. The line of demarcation is very strongly marked, there being generally an open space from 1½ to 2 miles wide, nearly destitute of trees all the way round. Above this space the character of the vegetation is completely changed, and the forests assume the appearance of woods in temperate climates, *besides being nearly destitute of underwood.* The breadth of the belt of jungle is very various; it is however no where greater than 20 miles, (between Muggalum and Goodaloor on the Mysoor side, where it joins the Wynaad jungles,) and in many places it does not exceed six, as at Matepollium, where it is crossed by the great road to Ootacamund by the Coonoor Pass.

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* Appendix, No. II.

The surface of the table land on the summit of the hills is much undulated, and presents various characteristics in the different divisions. The only circumstance common to the whole is the occurrence of swamps, of various extent, in the vallies formed by the undulations. The soil in these swamps is of considerable depth and very rich; in some it approaches to the nature of peat bog. The vegetation on the surface however is generally luxuriant, and they are always traversed by a stream of water, which after percolating through them issues forth as clear, pure, and as fit for use as if just taken from the spring. Nothing like miasm or exhalation exists in or near these swamps; as a proof of which Todermunds or villages are frequently found in their immediate vicinity, and the nature of the vegetation is entirely different from that which characterizes swamps in the low country.

The Koondahs towards the W. or Malabar side rise very suddenly from the plains below, and terminate in immense rocky precipices, presenting some of the grandest and most romantic scenery to be found in the world. This is particularly remarkable at the junction of the Nedimulla hills with the range of the Koondahs, properly so called. The outline of the summits forms an immense circular basin, bordered with precipices, every where perpendicular, in many places overhanging, and of such a height, that a stone dropped from the edge, will in many places descend at least 5,000 feet at one bound before reaching the bottom, the crests of the rocks being at the same time broken into the most irregular and fantastic forms. A minute examination of the whole of this line presents only one accessible point, the site of the new Koondah Pass, which will be hereafter more particularly described.

The table-land above is broken into a number of long rounded ridges, with deep narrow vallies interposed, and richly wooded in the more sheltered spots. A striking peculiarity of these woods, common in fact to the whole hills, is their being nearly destitute of underwood, and having their borders so well defined as to resemble the ornamental plantations of a gentleman's park; so complete is the resemblance, so artificially are they disposed, and so perfect is the keeping of the scenery, that in many parts one is tempted to look round for the castle or seat to which they belong. The soil is also exceedingly rich, and covered with a short close green sward, which is maintained in a constant state of verdure by the abundant supply of moisture. The Bowany river takes its rise in the Koondahs, flowing through a deep fissure till it reaches the S. W. angle of the range, when it makes a sudden turn to the eastward. It is joined by a great number of tributary streams, each of the lateral vallies having its own brook of beautifully limpid water. Several of these rise within a few feet of the edge of the precipice, bordering the hills on the west; but with scarce an exception all flow to the eastward. The edge of the Koondahs towards Ootacamund is broken into a number of vallies nearly filled with wood and interspersed with patches of verdure.

The steepness of the sides of the vallies on the Koondahs, and the loose nature of the soil, has given rise to a number of what are called in French eboulements or earth avalanches, the earth having slipped down in large masses, leaving a circular vacuity in the edge of the hill above. One of the most remarkable of these took place about 11 years ago, and is easily recognised at the distance of 12 or 15 miles; it is close to the point at which the new road ascends the Koondahs to cross into Malabar. The cause was probably the bursting of a water-spout immediately above the spot, the earth having been in all probability previously loosened by the filtration of water through the subjacent strata.

Towards the lower part of the vallies, which is still encumbered with rocks, trunks of trees, masses of earth, &c., a chalybeate spring is found issuing from below the debris, and mingling with the rivulet, to which it imparts an ochrey tinge. This spring was examined and analysed (as far as our utter want of nearly all the necessary instruments would admit) by Dr. Glen and myself, last winter. We found it to contain a considerable portion of red oxide of iron held in solution by carbonic acid gas, and from it's great strength, it's purity, and it's freedom from unpleasant taste and smell, we were led to conclude that it may prove highly useful in cases of debility of the digestive organs, &c., but as yet no opportunity has occurred of putting this conjecture to the decisive test of experiment*.

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* Numerous springs, containing salts of iron, are found in almost every part of the hills, but the one above-mentioned is much the strongest and purest yet examined, and probably not the least of it's recommendations is it's situation in an accessible spot, surrounded by beautiful scenery, and near (within a mile) a comfortable bungalow lately erected for the accommodation of travellers by the Koondah road. It may also not be irrelevant to mention, that being situated in a hollow nearly surrounded by hills and

A considerable stream, rising at the angle of the Koondahs, flows close along their base, and deconds the Keiloor Pass to join the Bowany; it forms a sort of boundary between them and the next or Dodabet division of the range. The Neddimulla hills, commencing at the N. angle of the Koondahs, run along in a N. N. E. direction as far as Neddiwittum, at the head of the Goodaloor Pass, when they terminate abruptly. They are of considerable elevation, and contain one or two remarkable peaks; Makoortee for instance, which is distinctly visible from the sea coast near Calicut. The ridge is narrow, and generally rather rocky and bare; on the Malabar side, it presents, like the Koondahs, an almost continuous line of precipices, the scenery being bold, grand, and romantic. They are separated from the central table-land by a considerable stream called the Pykarra river, which, descending the N. face of the hills by a succession of falls, joins the Moyaar, and sweeping round the whole N. and N. W. sides of the hills, runs into the Bowany near Danaikencottah in Coimbatoor. Like all the rivers on this side, its bed is intersected every here and there by transverse ridges of sienite, having a considerable dip, with soft soil in the intervals, which is worn away by the force of the stream, so as to form deep pools resting on the ridges.

The scenery in the vicinity of the Pykarra is in many places exceedingly beautiful, being bordered by rounded hills, well wooded, and sinking alternately into green grassy glades.

The next or central division is in extent, as in other respects, the most important of the three. The portion of it adjoining the Koondahs and Neddimulla hills, of nearly the same general elevation throughout, is broken into an immense number of little round hills, like tea-cups bottom upwards, with vallies of various dimensions interposed. Some of these hills are clothed with wood to their very summits, and most of them have more or less wood round their bases, or in the deep hollows between them and the next hills. The southern part of the table land is highly cultivated and very populous; there are also numerous villages on the southern slope towards Billycull; but the rest of the surface, where not wooded, is entirely occupied by pasture land, and is the head-quarters of the

considerably lower than the general level of the table land, the climate during the winter months, is milder and more equable than that of Ootacamund.

Toder population, whose munds or villages are found scattered over it, generally in the most sheltered nooks, and always close to a wood.

The Dodabet range rises at the N. extremity of this division, and crossing it obliquely (forming its eastern boundary) in a direction from N. N. W. to S. S. E. terminates in bold overhanging rocks beyond Coonoor. The range when regarded from a distance seems to form one vast pyramid with a very wide base, running in the direction above stated, and having consequently very gradually sloping sides. The inclination however on the E. and W. faces is greater, and the ascent rather abrupt. The summit 8,760 feet above the level of the sea, and 1,344 feet above Ootacamund, is composed of a round hummock with a flattened top, distinguished by a solitary tree of the Rhododendron species, and commanding a most extensive view in every direction, except the W. where the horizon is shut in by the line of the Koondahs, of nearly equal elevation with itself. Directly at its base on the W. side is situated the cantonment of OOTACAMUND, in a basin formed by the body of the mountain on one side and two extensive spurs on the N. and S. so that the only opening is towards the W. Though originally chosen almost by accident, the site of the cantonment appears to possess almost every advantage of climate, shelter, accessibility, command of fuel and water, and though last not least, its position in the centre of the table-land, at least eight miles from the verge of the hills on either side, ensures it against even the suspicion of miasm or impure atmosphere.

COONOOR (the head-quarters of the Pioneer corps), is situated at the S. extremity of the range, close to the edge of the hills. The cantonment contains a number of small houses belonging to the Pioneer officers, but is chiefly remarkable as being placed at the head of the magnificent Ghât of the same name, now nearly finished, and which forms the great road to the whole S. and E. of India.

The Ghât runs up a deep fissure betwixt the rocks terminating the Dodabet range, and a long projecting spur, thickly clothed with wood, and distinguished by three or four rounded eminences, on the outermost of which is situated a hill fort*, in a very commanding situation, the rocks descending almost perpendicularly into the low country on every side, except that on which it is approached from the table-land. The remains of a similar fort are to be found on a high rock opposite Billycull, and a third at a place called Atra, beyond Kotagherry. It is difficult to conceive for what purpose these forts were intended, the more so as considerable labour and expence must have been incurred in their construction, while their isolated position and excessive difficulty of access must have made them nugatory as regards any object of defence or protection: still less could they be intended to command the passes of the hills, none of which are sufficiently near. The only plausible conjecture is, that they were intended as state prisons or repositories of treasure. They are said, I know not on what authority, to have been constructed by Hyder Ally*.

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* Hullicuwhich Huldroog.

The only other Ghât which is practicable for wheel carriages descends into Mysore at the northern extremity of the Neddimulla hills, and is generally known as the Goodaloor Pass; a third road, much frequented by natives, but only practicable for bullocks and foot passengers, descends from Billycull at the N. end of the Dodabet range, and is usually called the Segoor Pass.

The line of separation betwixt the central and eastern range is not so well marked as between that and the Koondahs.

The western face of Dodabet descends with a very sudden slope, the hollows being filled with wood, and the bottoms of the interjacent vallies occupied by swamps. After crossing one or two of these vallies, the range becomes broken into a succession of small conical rocky hills, at some distance apart, and surrounded by a sort of table-land, on which Kotagherry is placed. The country in its neighbourhood is covered by bushes, has but few trees or forests, and is neither so picturesque nor so varied as on the opposite side of the hills. It is intersected by numerous deep vallies, descending gradually from the centre, and debouching into the low country. One of the most remarkable of these is known as the orange valley, from the number of wild orange and lime trees found in it. It rises at the N. E. angle of Dodabet, and makes a sweep round the base of the Kotagherry table-land, till it arrives opposite the Guzzlehutty Pass, when it descends abruptly into the low country. Its general level is much below that of the table-land, probably not exceeding 4,500 feet above the sea, from which circumstance, and its being shut in on both sides by steep hills, its average temperature is much higher than that of any neighbouring point on the hills. The soil in the bottom of the valley is exceedingly deep and rich, and the character of the vegetation approaches the tropical, or at least that of the southern portions of the temperate regions.

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* Captain Harkness gives a different account of their origin. See his work.

Dimhutty is situated on a plateau between Kotagherry and *the orange valley, lower than the former.*

Beyond Kotagherry, the hills run out into a number of long narrow ridges, gradually descending into the low country of Coimbatoor, but though in some places rocky, scarcely any where so precipitous as the western face of the hills, and the scenery is consequently less grand and striking. Immediately opposite the termination of the hills in this direction, and separated from them by a deep valley filled with dense jungle, is the Guzzlehutty Pass, leading from Coimbatoor into Mysore; formerly much frequented, but now nearly deserted. Beyond the Guzzlehutty Pass, rise the Bulgherries, so named (I believe) from a celebrated temple; they are of considerable height, but nearly unexplored from the difficulty of access and the want of supplies.

CLIMATE.

On this very important subject, I may be excused for entering at some length, and as what I shall have to state is the result principally of my own observations, closely directed to its nature and effects during the whole of a residence of nearly three years, I have no hesitation in claiming for my statements the merit of accuracy at least.

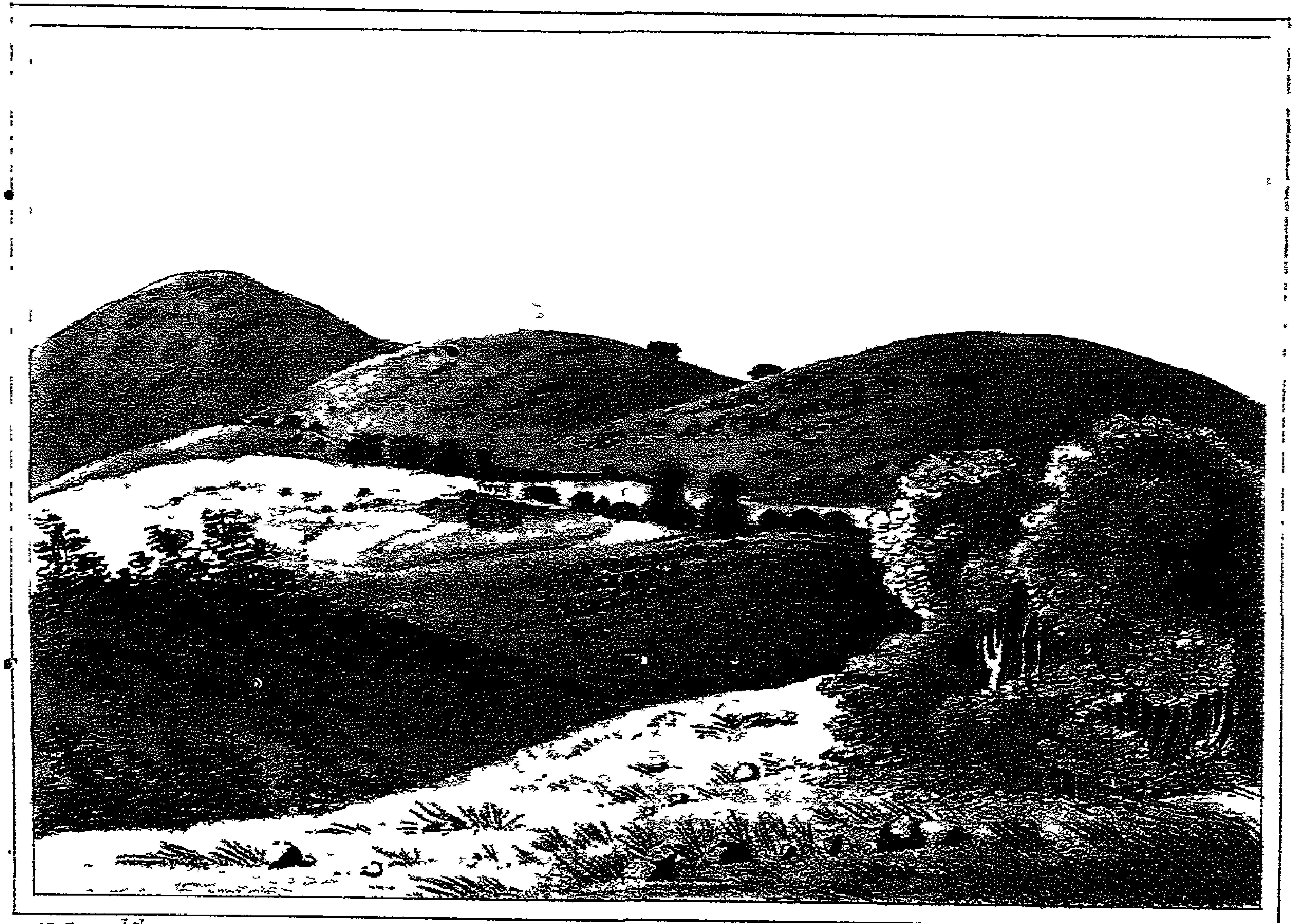
There are three circumstances connected with the Neelgherries which must have a material effect on their climate.

The first is, their elevation above the level of the sea.

The second, their position near the line of demarcation of the two monsoons.

The third, their isolated position, at a great distance from mountains or table-land, of equal or nearly equal height.

I. The temperature of the air, as has been ascertained by a number of experiments, and elaborate calculations founded thereon, undergoes *a regular and graduated diminution, as it becomes* more rarefied in ascending from the surface of the earth, owing, as is



well known, to its increased capacity for caloric. A variety of formulæ have been given for calculating the exact reduction of temperature at given heights, but it will be sufficiently accurate for our purpose to say, that at heights not exceeding two miles, *the difference is 1° of Fahrenheit for every 300 feet of ascent.*

Now the mean annual temperature at the level of the sea in the latitude of the hills, according to the formulæ of Mayer, as corrected by *Playfair, is 83°*, and the height of Ootacamund,* above the level of the sea, being 7,416 feet, (vide Appendix, Table of Heights,) the calculation will be as follows $\frac{7416}{300}=24^\circ.72'$ the theoretic difference of temperature between the level of the sea and Ootacamund, consequently $83^\circ-24^\circ 72=58^\circ.28$ mean annual temperature of Ootacamund. Now it will be seen below, that the annual temperature of Ootacamund, deduced from the mean of 25 months' observations, is 58°.68, so that the difference between this, the observed mean, and that deduced from theory, is only 0°.40, which, trifling as it is, is perhaps to be accounted for by the fact of the observations alluded to not being for consecutive months: the mean for some of the *colder* months being wanting.

The next most obvious effect of the elevation of these regions is the increased power of the sun's direct rays, in proportion as the *conducting power of the medium is diminished; in other words,* as the air is rarefied. This effect is further increased by the smaller absorption of heat in its passage to the surface, the thickness of the stratum of air through which the sun's rays have to pass, being diminished by the amount of the elevation above the level of the sea. No exact formulæ for calculating this effect of the sun's rays has yet been given, owing partly to the want of good photometrical observations, and the number of disturbing causes to be taken into account.

That such is the fact will, however, be evident from consulting the annexed meteorological tables, where it will be seen that the photometer at 10 A. M. in the dry season frequently indicates 120° (12° centisimal), when the thermometer in the shade only shews a temperature of 60° or 61° (15·5 or 16·1), or to render the difference more *intelligible, when the temperature of the air in the* shade is only 60°, the increase of heat from the sun's direct rays would raise it to 81°6†.

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* Brewster's Edin. Encyclop. Article Meteorology.

† This leads to a very important caution on the part of invalids and

The effect of this increased power of the sun's rays on the general temperature, and on the soil of elevated regions, would be very considerable, were it not for certain disturbing causes, the most powerful of which is the wind, which by agitation of the atmosphere scatters the heat before it can accumulate. When moving along the ground at the rate of eight miles an hour, it diminishes the calorific action of the light from the sun and sky one-half, but if it sweeps with a velocity of 16, 24, or 32 miles in the hour, it will reduce the whole effect successively to the 3rd, the 4th, or the 5th of its standard*. The impression made on the ground therefore, seldom exceeds the third part of the computed measure, and often will not amount to one-fifth; and its effects on the air in the shade are probably nearly nugatory, from its increased capacity for caloric and its bad conducting power. A similar modifying effect is produced by the ground being covered with grass or plants, the multiplied surface of which exposed to the contact of the air dissipates the greater part of the heat before it accumulates. A corresponding effect has been remarked with regard to the impression of cold, but this is only true to a certain extent, as from the great clearness of the sky in elevated situations the effect of radiation is greatly increased. It has in fact been frequently observed on the hills, as well as elsewhere, that plants, grass, and other substances near the ground are from this cause, viz. increased radiation, strongly frozen, when the circumambient air indicates a temperature some degrees above freezing point.

These and the other less important effects of the relative altitude will be more evident when we speak of the various conditions of the atmosphere in detail, to which we will also refer our consideration of the second modifying circumstance, namely, the situation of the hills between the influence of the two monsoons, and partaking of both; merely observing, that the sky being covered with clouds during the months of June, July, and August, when the sun is vertical, tends greatly to equalize the temperature, and to obviate the effects which would otherwise be produced on vegetation and on the human body, by the united power of the sun's rays and the excessive dryness of the atmosphere.

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others resorting to all mountain regions in tropical latitudes (at least during the dry season), viz. to expose themselves as little as possible to the direct rays of the sun, without some adequate protection. See Article "Hints to Invalids."

[*] Encyclop. Britannica, Article Climate.

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The third circumstance which we have stated, as naturally influencing the climate of the hills, and certainly not the least important, is their isolated position at a great distance from land of equal or nearly equal elevation. This will be better understood by comparing them with the subordinate ranges, leaning against the lofty chains of the Pyrenees, the Alps, Caucasus, or Himalaya. In all these situations it is found that the temperature is liable to great, sudden, and rapid variations. The air when heated in the plains below rises to a certain height, but instead of passing over the first range, it rests there; producing a considerable elevation of temperature, until it is suddenly succeeded by a column of cold air, falling by its own weight from the tops of the snow-mountains behind, depressing the temperature several degrees, and generally succeeded by a deposition of moisture (according to the law which guides the capacity of air for moisture), in the shape of rain or snow. In the warmer latitudes, the variation is proportionably much greater, it being no unusual occurrence for a current of air approaching in heat to that of a land wind, to be suddenly succeeded by a blast from the opposite direction as cold as ice. This I have frequently observed at Teflis and other places bordering on the Caucasus, and it is not without reason assigned as one of the causes of their extreme unhealthiness at particular seasons. Another consequence of the vicinity of such ranges to lofty mountains is the frequent changes of the electrical state of the atmosphere, indicated by thunder-storms, heavy falls of rain, &c. &c. All these effects are much modified by the comparative distance and elevation of the snowy ranges, but they must always operate unfavourably on the climate of the lower chains, as regards equability of temperature, one of the most important points connected with the choice of a Sanatarium, and we are justified in considering the perfect immunity of the Neelgherries from all such disturbing influences as one of the greatest advantages of their position.

We shall now proceed to consider the various conditions of the atmosphere, (in other words, the climate,) in detail, as exhibited under the modifications of pressure, temperature, and moisture; and conclude with a succinct account of the usual succession of seasons*.

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* It is necessary to observe that all the succeeding observations, except when otherwise distinguished, apply to Ootacamund only. The want of

Pressure (Barometer). The greater part of the observations in the tables were taken at 10 o'clock A. M., it having been ascertained by a series of carefully conducted experiments, that the barometer attains its mean daily height at that hour.

The range of the barometer on the hills appears to be considerably greater than in the same latitude at the level of the sea. I have no access to any accurate account of the range on the Malabar Coast, opposite to the hills, but I believe it does not exceed 0·250 of an inch. Now, on an inspection of the annexed meteorological tables, it will be seen, that in January, 1832, the barometer attained the height of 23·375, the maximum of its elevation since my observations began, while in the month of September previous, it had fallen as low as 22·675, (corrected to 32° Fahrt.) shewing an extreme range of 0·700. This range appears however to differ annually; being for three years as follows:

For 1831, it was 0·560.
1832, 0·539.
1833, 0·388, giving a mean annual range of 0·495*.

As might have been anticipated, the barometer appears to attain its maximum height in the cold dry weather of January or February, and its minimum during or immediately after the S. W. monsoons. It generally begins to sink gradually about the beginning of April, and continues descending (but with occasional starts) till August or September, when it again rises gradually till the cold weather sets in. But here (as is found to be the case elsewhere within the tropics), I have not been able to satisfy myself that any accurate prognostication of the state of the weather is to be deduced from the fluctuations of the mercurial column. I have seen it rise suddenly before or during heavy showers of rain, *and sink, equally inexplicably, before a course of fine dry weather.* The only agent which appears uniformly to act in the same way

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instruments at the other stations has prevented the collection of any meteorological data there, except a register of the thermometer for *some months at Kotagherry*, to be found in the Appendix.

* Dr. Dalmahoy states the mean range at only 0.245; but as his observations only extend to four months, and mine to upwards of 30, with a very delicate and accurate instrument, I consider my statement as approaching more nearly to accuracy. The same observation applies to all the succeeding meteorological results, in many of which I differ slightly from Dr. Dalmahoy.

upon it is wind, the mercury always rising before or during the prevalence of high wind. I have also occasionally been able to predict wet weather, from observing the top of the column to be flattened, or concave, but not with any degree of certainty.

The daily range of the barometer is very trifling, probably never exceeding 0·040 or ·060 of an inch, and seldom greater than ·035; but on this head, as on that of its horary oscillations, I am unable to speak confidently, from want of leisure to make the necessary observations; the horary oscillations occur, as far as I have observed, exactly at the same hours, and in the same succession, as elsewhere all over the globe; but according to Dr. Dalmahoy, only to half the extent observed at Madras, and they are not interrupted during the monsoon, as conjectured by Baron Humboldt.

The mean annual height of the barometer appears to vary considerably, and to have diminished annually for the last three years: this may have depended on the situation of the instrument*. The mean of ten months :

in 1831, was 22·933.
Six do. in 1832, ,, 23·067.
Eight do. in 1833, ,, 23 054. giving as an annual mean for 24 months in 3 years, 23·018. This is probably near the truth, and Dr. Dalmahoy, in his calculations to determine the height of Ootacamund above the level of the sea, assumes it to be 23·005.

Subjoined are the results in a tabular form :

Mean height of the barometer, ...	23·018
Greatest range, ...	·700
Mean annual range, ...	·495
Probable mean daily range, ...	·040
Greatest daily range, ...	·060

Temperature. The observations from which the subjoined conclusions are drawn, are the fruit of pretty close and continued attention to a number of very good instruments, placed in a situation to be little if at all affected by extraneous circumstances, so that they may be depended on as tolerably accurate, particularly for the last nine months, through which they are consecutive.

There are several methods of estimating the mean temperature of a place elevated above the level of the sea. One is, by taking the temperature of copious springs near their sources. Another, by supposing the heat to decrease uniformly at a certain rate, ascending from the level of the sea; and a third, by taking the mean of the observed temperature. This last is of course by much the most accurate, but we shall find that it agrees in a remarkable manner with the other two.

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* Vide Appendix, (observations prefixed to meteorological tables.)

According to the calculation already given, in discussing the effects of elevation on temperature, the mean temperature of Ootacamund should be 52°·28.

There is some discrepancy of opinion as to the correct method of ascertaining the mean observed temperature. The author of the able article, Meteorology, in the Edinburgh Encyclopedia, after an elaborate consideration of the various proposed methods, gives the preference to the mean of the daily extremes. According to this calculation, the mean of the daily extremes for 25 months is 58°·68 which we therefore assume as the mean annual temperature of Ootacamund. The next most important consideration is the diurnal range of the thermometer. From what has been stated of the calorific power of the sun's rays, and the contrary effects of radiation of great elevations, we must expect this to be considerable. Accordingly, we find that it occasionally is as much as 24°, (January, 1832,) precisely in the season when the above causes operate most powerfully; and that in July, when they come least into play, it is still 10°. Subjoined is the daily range for nine months of this year, which may be considered as an average season:

January,	20·40		June,	15·59	
February,	20·33		July,	10·29	Minimum.
March,	23·33	Maximum.	August,	15·22	
April,	19·73		September,	11·73	
May,	16·48				

Giving a general mean of 17.01.

The greatest observed annual range (but in different years) appears to be 38° (viz. between 39° and 77°.) The mean *annual* range for part of three years is as follows:

For 1831,	15·20
1832,	18·33
1833,	17·01

It is important to remark, that this range is still betwixt two points, which occur frequently in temperate climates, and is certainly less than what prevails in most of them. The maximum observed is 71°, only 2° above what is assumed as summer heat in England, and the minimum 38° is much above what frequently occurs even in the mildest parts of Europe.

In stating the observed minimum at 38°, it must be recollected, that the observations were taken at a point raised above the lake, and about half way up the hill bordering the cantonment on the south.

In the valley below, from the combined effects of radiation, evaporation, and the descent of the colder columns of air by their superior weight, which are moreover comparatively undisturbed by the wind, the temperature frequently falls below freezing point, and ice is often found in the dry season half an inch thick. Hoar frost is commonly seen extending half way up the hills on every side, disappearing as the power of the sun's rays gradually increase. The difference is most evident in descending into the lower vallies on a dark clear and still night, when the sudden immersion into the column of air next the ground, cooled by its contact with the radiating earth at the bottom of the valley, strikes one with a sudden chill. As a consequence of the same cause, the lower vallies are frequently filled with a dense fog, while the stratum of air immediately above is perfectly clear and transparent.

So powerful is this effect of radiation from the earth, that a cup of water or milk, placed on the ground, even in the higher situations, instantly freezes, while a thermometer, elevated three feet above it, will only indicate a temperature of 38°, 39°, or 40°. This fact leads to some important conclusions, both as to the situation of houses, and of ground selected for horticultural or agricultural purposes. In a clear bright day, the thermometer generally attains its maximum at about 2 or ½ past 2 P. M., but this is, to the feelings, by no means the hottest part of the day, owing to the constant current of wind prevailing, from one quarter or another, at that time. About ½ past 8 or 9 A. M. is the time when the sun's rays appear to have most power, the air being then still, and its capacity for heat having been diminished by the increase of density arising from the cold of the succeeding night. This it is important for invalids to observe, as well as the sudden chill produced by the sinking of the sun below the horizon in the evening, when the column of rarefied air next the surface rises aloft, and is rapidly replaced by a colder stratum from above.

The minimum generally occurs about ½ an hour before sunrise, when, as before observed, the lower vallies are generally filled with fog.

During the monsoon season, when the sky is covered with clouds, at once diminishing the power of the sun's rays and obstructing the effect of radiation from the ground, the temperature is remarkably equable, *the range seldom exceeding 12° or 14° in the open* air, while in rooms without a fire it is under 4° or 5°. The thermometer attached to one of my barometers, kept in a small sleeping room without a fire-place, (though the house itself was rather exposed,) during the months of May, June, July, August, and September, 1831, *never fell below 59°·5, nor rose above 62°. This* is, therefore, notwithstanding many drawbacks, much the most favorable season for invalids, and should be selected, when a power of choice exists, as the period for ascending the hills.

Photometer. The effects of the radiation of the sun's rays appear to have attained their maximum on the 18th January, when the photometer indicated 126, that is, the calorific effect of the sun's rays was equivalent to 22°·68 Fahrenheit. The minimum appears to have occurred on the 27th August, when the increase of temperature was only equivalent to 9°, giving a mean of 15°·84. The monthly mean appears hereafter.

The observations on radiation with the æthrioscope are not yet in sufficient number to afford any data from which to draw accurate conclusions.

Moisture. Next to the impressions of temperature on the human body, the most sensible effects are produced by the relative moisture of the air. The laws which regulate this condition of the atmosphere are not yet so accurately investigated as those of pressure and temperature, and it is more difficult to render their operation generally intelligible, from the circumstance of the phrases in common use to express its variation, conveying in many instances ideas in direct opposition to their philosophical meaning. For instance, what is generally called *damp or moist air, by no* means infers its containing more moisture than another column which gives a feeling of dryness, but only that it is more ready to part with its moisture, from some peculiarity either in its own constitution or that of the body with which it comes in contact. Without *entering into an elaborate disquisition on this* somewhat complicated subject, it will be sufficient to observe, that the capacity of air for moisture, in other words, its dryness, depends on its relative density and temperature; rarefied air dissolving more moisture, i. e., being dryer than denser air, and heated air more than cold air; consequently when two columns or strata of air, of *different density*, or (*which is almost a necessary consequence*,) different temperature are mixed, the result is almost uniformly a deposition of moisture in the shape of fog or rain, from the capacity of the mixed column of moisture being so much diminished, that it can no longer hold the aggregate quantity of water in solution; the quantity of the deposit, that is, the heaviness of the shower, being determined by the disproportion between the relative density and temperature of the two strata, and their being each nearly saturated or not with moisture. An example will render this more distinct. Let us suppose that a current of air at the temperature of 25° (disregarding density for the sake of brevity), meets another current of the temperature of 15°, and that both are fully charged with moisture. When mixed, their mean temperature will be 20°. Now, it has been ascertained by experiment that air, (i. e. a cubic mass of it 40 inches each way) at 25° can hold in solution 317·5 grains of moisture, and at 15° 200 grains, the mean of which is 258·75; but at the mean temperature of the two currents, viz. at 20°, air can only contain 252 grains; therefore 8·75 grains must be precipitated either in the form of clouds (fog) or rain. Saturation of the air with moisture, so as to produce deposition on any further diminution of heat, may also be produced by a simple reduction of the temperature of the column below the point at which it can hold its moisture in solution. Thus a column of air at the temperature of 15° with 180 grains of water in solution, if reduced by any cause to the temperature of 12·8, does not deposit any moisture, being still capable of dissolving 180 grains; but if a further reduction of 2° take place, a deposition of 35·3 grains ensues.

Upon these simple facts are founded a number of curious experiments and observations, some of which are detailed in the annexed Meteorological tables, such as the quantity of moisture contained in the air at the time of observation, its dryness or the quantity of moisture required to saturate it, and thirdly, the reduction of temperature required to produce saturation, and consequent deposition, or the dew-point as it is called.

These phenomena, however, have not yet been sufficiently investigated to lead to any certain practical conclusion, and a very condensed statement of the results is all that is required to prepare us for a consideration of the hygrometric state of the air on the hills, as regards the quantity of rain, and its time of falling.

The air during the month of January, February, and March is intensely dry, the point of saturation, (or temperature to which the air must be reduced to deposit any part of its moisture,) being occasionally as low as 13°, the temperature of the air being 60°. In April it begins to fluctuate, and in May the quantity of moisture increases very perceptibly, being accompanied by rapid changes of the electrical condition of the atmosphere, indicated by thunder-storms and heavy showers, but of short duration. During June, July, and August, it is nearly charged with moisture; in September, it is again fluctuating; in October and November, moist; and in December, it begins to re-assume its dry state.

In close connection with the above statement we find, that there is little or no rain in the first three months, some showers in April and May, a good deal of drizzle and light rain in June, July, and August; the month of September varies, as does that of October; in November there are heavy falls, and in December the weather again becomes dry. This will be more distinctly seen in the table*, in which is given the fall of rain in each month during the greater part of four years, as observed by my friend Dr. Glen, of the Bombay establishment; the mean annual fall, as deduced from this table, is 44·88 inches, or 13·58 inches greater than the mean fall in England, as stated by Mr. Dalton†. The following table will probably be interesting, particularly to invalids, whose comfort depends so much on the capability of taking exercise: it presents the actual state of the weather for 366 days, from 1st March, 1831, to 29th February, 1832, which, from all I can learn, may be considered an average season:

Number of days of heavy rain,	19
Do. occasional showers with fair intervals,	81
Do. cloudy,	28
Do. clear and fine,	238
	366

It is morever satisfactory to be able to state, that on a great majority of the days marked showery, the showers occur at intervals, generally, in the afternoon, and that the state of the atmosphere in the morning at least, is generally such as to afford every facility for taking exercise either on foot or horseback.

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* Appendix, No. 3, Meteorological Tables.

† Edinburgh Encyclopedia, Article Meteorology.

The course of the seasons is subject to considerable variations, so that it is not easy to give an exact account of them. The following however may be considered as a pretty fair statement of their usual succession.

The month of January is uniformly fair, clear, and dry; the nights are very cold, and it often freezes in the vallies, while in the morning, before the wind has risen, the rays of the sun are very powerful. Towards 10 or 11, A. M. a current of cold air begins to blow from the E. or N. E., and gradually increases to a strong breeze, sharp and intensely cold. The united action of the sun and this wind acts very unpleasantly on the skin, particularly of the face and lips, which it blisters like a frost at home. It is also rather trying to the more delicate classes of invalids, before they become acclimatized; and such of them as have it in their power, should seek shelter in the milder atmosphere of Kotagherry or *Coonoor*. To those in restored health or whose convalescence is somewhat advanced, its effects are bracing, tonic, and exhilirating in the highest degree.

Mean pressure in Jan.	23·134	Mean of photometer, ...	118·5=21°·73
Mean temperature, ...	53°·10	Mean fall of rain, ...	none.
Mean do. of the day,	59°·72	Mean dryness of air, ...	119·2
Mean daily range, ...	20°·4	Mean quantity of moisture,	79·2

The same remarks will apply to February, except that the frost is stronger during the nights, and the wind less violent during the day. The vallies are covered with hoar frost, and the herbage, from the united effects of congelation, and the heat radiated by the sun, becomes parched and brown. The sky is cloudless, and the nights brilliant and clear beyond description.

Mean pressure in Feb.	23·004	Mean of photometer, ...	117·6 =21·16
Mean temperature, ...	56°	Mean fall of rain, ...	0·17 inches
Mean do. of day, ...	62°	Mean dryness of air, ...	121·3
Mean daily range,......	20°33	Mean quantity of moisture,	95·5

Towards the end of March, the frost disappears, the weather gets gradually milder, and there are generally a few heavy showers.

Mean pressure in March,	23·467	Mean of photometer,... ...	101·0=18·83
Mean temperature, ...	62°	Mean fall of rain, ...	1·02 inches.
Mean do. of day, ...	69°	Mean dryness of air, ...	218·4
Mean daily range,......	23°·33	Mean quantity of moisture,	44·1

In April, the weather assumes quite the feeling of spring in the more temperate parts of Europe; there are frequent showers, followed by bright sunshine; the air is mild and balmy, and vegetation, hitherto kept in check by the frost, springs up rapidly and luxuriantly. Towards the close of the month, the wind hitherto steady from the N. E. begins to be variable, and finally settles in the S. W.

Mean pressure in April,...	23·109	Mean of photometer,	82°·66=14·85
Mean temperature,.........	63°	Mean fall of rain, ...	4·00 inches
Mean do. of the day, ...	68°	Mean dryness of the air,	144·7
Mean daily range, ...	19°·73	Mean quantity of moist.	108·4

May is our warmest month, and occasionally before rain there is a feeling of closeness in the air, which is also frequently obscured with clouds gradually becoming denser and heavier. Heavy thunder-storms generally usher in the monsoon, which sets in at the end of this month, or beginning of the next; the rain however which falls is very partial, often descending in torrents, intermingled with hail, at one side of the cantonment, while it is perfectly fair at the other. It is however, upon the whole, a delightful month, and the robe of verdure which covers the hills, with the fresh green of the foliage in the forests, adds much to the beauty of the scenery.

Mean pressure in May,...	23·018	Mean of photometer, ...	72·26=13·06
Mean temperature, ...	62°	Mean fall of rain,.........	6·50 inches.
Mean do. *of day, ...*	*66°·38*	*Mean dryness of air,......*	82
Mean daily range,.........	16°·48	Mean quantity of moist.	157

On the setting in of the S. W. monsoon, which generally occurs early in June, (following the course of the Malabar monsoons, only that it is 10 days or a fortnight later,) a heavy bank of cloud settles itself on the Koondahs and Neddimulla hills, from which detachments, as it were, are sent off towards the central range, enveloping every thing in a dense fog, with occasional showers of light driving rain.

The rain is however by no means constant, and seldom lasts for more than two or three days at a time, the intervals being very agreeable, from the perfect equability of temperature. The only drawback to exercise is the slippery nature of the soil, which renders the roads unsafe for a short time after the showers have fallen; the rapidity with which they dry, however, is extraordinary, and it is rare for an invalid to have his exercise interrupted for more than a day or two at a time.

Mean pressure in June,	23·015	Mean of photometer,... ...	64·01=11°·52
Mean temperature, ...	60°·18	Mean fall of rain, ...	6·50 inches.
Mean ditto of the day,	63°·82	Mean dryness of the air,...	57·8
Mean daily range,......	15°·59	Mean quantity of moisture,	167·23

The monsoon continues with greater or less constancy throughout July and August; but fortunately for those who suffer from the damp or the occasional deprivation of exercise, the weather, at this period, is comparatively dry and fine at both Coonoor and Kotagherry: the brightness of the weather at these places, being only occasionally interrupted by a passing shower. In fact the monsoon appears to expend its violence on the Koondahs, and the other hills bordering the table land on the west, where it rains pretty constantly, attended with violent gusts of wind, the rain becoming less and less heavy as you approach the central range; on passing which you are suddenly transported into another clime, with bright clear sunshine, and a soft mild temperature. And it must be held one of the great advantages of our position that you can thus, by shifting your quarters only 16 miles, almost entirely beguile the only unpleasant weather an invalid has to dread.

Mean pressure in July,	22·941	Mean of photometer,... ...	53·57=10°·71
Mean temperature, ...	58°.77	Mean fall of rain, ...	4·27 inches.
Mean ditto of the day,	58°·2	Mean dryness of the air, ...	49·7
Mean daily range, ...	10°·29	Mean quantity of moisture,	150·3

Mean pressure in Aug.	23.045	Mean of photometer, ...	65·06=11°·71
Mean temperature, ...	58°'0	Mean fall of rain, ...	4·00 inches.
Mean ditto of the day,	62°'·7	Mean dryness of the air,...	60·8
Mean daily range,......	15°·22	Mean quantity of moisture,	129

September and October are uncertain months—if the S. W. monsoon has begun early, and exhausted itself, they are fine, warm and pleasant; but if there has been any deficiency in the previous falls of rain, there is generally a good deal of fog and drizzling rain.

Towards the end of September the wind again shifts round to the north, and it becomes sensibly colder.

Mean pressure in Sept.	22·785	Mean pressure in October,	23·056
Mean temperature, ...	56°·5	Mean temperatue, ...	58°
Mean fall of rain,......	6·36 in.	Mean fall of rain,...	6·51 inches.

November, all over the northern hemisphere, is an unpleasant month; but with the exception of a few heavy bursts of rain from the N. E. monsoon, then prevailing at Kotagherry, and the N. E. parts of the range, it is generally dry and equable.

Mean pressure in November,	23·070
Mean temperature,	56°
Mean fall of rain,	3·52 in.

In the early part of December there are some foggy days, and occasionally heavy showers as the winding up of the monsoons, but the middle and end of the month are almost always cold, clear, and fine.

Mean pressure in December,	23·174
Mean temperature,	52°·50
Mean fall of rain,	1·73 in.

Such is, what I believe to be, a fair resumé of the climate and seasons of Ootacamund; and after considerable experience of the climate of almost every country in Europe, and some few in Asia, I can safely say that there is not one in which there is more to praise or less to blame; none in which less inconvenience is suffered from extremes of heat or cold, moisture or dryness; in short, none in which I could more easily make up my mind to pass the evening of my days, than the lofty regions of the Neelgherries, could I forget the ties of home and country.

CLIMATE OF KOTAGHERRY.

We are in possession of but little information as to the condition of the atmosphere at Kotagherry, owing to the want of instruments. The tables only extend to the temperature, and that only for eight months, from January to August.

The difference of elevation being 891 feet below Ootacamund, the theoretical difference of temperature should be $\frac{891}{300}$=2·97, making the mean annual temperature 61°·65. But on taking the mean of the extremes for the eight months in the table, it appears to be 62·85, or 1·60 above the calculated mean. This difference may be partially accounted for by the want of observations for the other four months; but there can be no doubt that the mean temperature of Kotagherry is proportionally higher than that of Ootacamund, from the circumstance of the months of May, June, and July, at the former place, being generally clear, fine, and bright, and the sun's rays more powerful. The mean daily temperature of Kotagherry is 66°·32 or 2°·60 higher than that of the corresponding period at Ootacamund.

The principal difference betwixt the two climates appears to be the greater mildness of that of Kotagherry, the extreme and daily range being also less. The minimum observed at Kotagherry is 43° and the maximum 76°*, a range of 33° or 5° less than the extreme range at *Ootacamund. The air is also evidently moister, and the* nights not nearly so cold. During the months of June, July, and August, when there is pretty constant fog, drizzle, or rain at Ootacamund, the weather is clear, bright, and fair at Kotagherry, that part of the hills not being subject to the influence of the S. W. monsoon, and it makes an agreeable change to those who suffer from damp and deprivation of exercise at Ootacamund. It is upon the whole a more eligible residence, particularly in the monsoon season, for the more delicate classes of invalids on their first arrival, and in certain complaints which are liable to be aggravated by internal congestions, as will be hereafter more particularly explained. But, on the other hand, it has not the bracing, invigorating effects of the more lofty parts of the table-lands, and people in tolerably confirmed health generally give a very decided preference to Ootacamund.

Coonoor has pretty nearly the same climate as Kotagherry, though slightly warmer; it is also nearer the edge of the hills, and more liable to fogs from the sudden condensation of the moisture contained in the heated air rising from below over the ridge of the table-land.

GEOLOGICAL FORMATION.

My acquaintance with the science of Geology is so slight that I have little information to give on this head. The formation of the whole range is decidedly primitive, consisting almost wholly of sienite. Numerous nodules of a species of conglomerate, approaching to what is known on the Malabar coast as laterite or soapstone, are found in the vicinity of Ootacamund and Kotagherry; and in several spots betwixt the latter place and Coonoor there are indications of large beds of this substance, which when rendered more accessible will probably prove valuable for purposes connected with building. My lamented friend Dr. Christie pointed out to me several considerable beds of a whitish earth, which is used for white-washing, and which he considered to be decomposed felspar, nearly approaching to the famous porcelain earth of Limoges. Quartz, in a state of considerable purity, but partially decomposed, is also found in great quantity, in detached blocks, near the Koondah Ghât and below Billycull.

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* One day (15th August) the maximum is marked 80°; but this was previous to heavy rain, and must have been accidental, as the preceding day it was only 69°, and the following 66°.

The sienite composing the basis of most of the rocks is of a very hard description, and, but for the difficulty of working, it would be a valuable building material in situations where durability is a desirable requisite. Many portions of it contain crystals of garnet, and iron is very abundant in many places, though I have not observed any specimens deserving the name of ore. It would appear that gold is contained in many of the rocks on the western side, as all the streams descending into the great valley of Nellumboor, carry down detritus containing sensible portions of gold dust, which is washed out by the poorer natives in that quarter. An officer was lately appointed to examine this valley, with the view of ascertaining the probability of working mines regularly with advantage to Government, but I have not heard the result of his researches, and it is to be feared that the prevalence of thick jungle in this quarter, and its unhealthiness during the greater part of the year, would prove a serious obstacle to any such undertaking. No lime has been found on any part of the hills, and the clay in general found is said to be not well suited to the manufacture of bricks, tiles, or pottery, though this, I suspect, arises from want of skill on the part of the manufacturers, as very good bricks and tiles are now produced in considerable quantity at many places within the limits of Ootacamund alone.

The water found on the hills is occasionally hard, and sometimes contains iron, but there is no want of springs of beautifully soft water.

SOIL AND PRODUCTIONS.

The soil over the whole extent of the table-land is nearly without exception of the richest description, but many circumstances of situation, exposure, command of water, and others less obvious perhaps, have contributed to confine the cultivation to the slopes next the extreme range of the hills, on the S. and E. sides of the range. The country for some miles in the segment of a circle commencing at Mailcondah, at the base of the Koondahs, continued through Coonoor, Kotagherry, and the Orange Valley to

Billycull, is almost entirely occupied by the villages of the Boodigahs and Kothurs, each village being generally placed on a small hill; or slight slope, surrounded with numerous patches of cultivation, which are kept remarkably clean and free from weeds; they are protected in the proper season by hedges formed by boughs or small sticks, from the depredations of the elk, hog, porcupine, and other wild animals. The villages themselves generally consist of a single row of houses, with a low, very broad pent roof, carefully thatched, and a considerable space in front of them is provided with a bed of hardened clay, beat smoothly down, so as to form a sort of barn-floor for threshing, cleaning, and winnowing the grain. The most ordinary articles of cultivation are:

Barley, of a coarse description, in considerable quantities. A sort of small grain called Keeree-mow*, growing on a thick fleshy stalk, the head containing the grain, being when ripe of a blood-red or bright crimson colour, and closely resembling the plant called in Europe prince's feather, or "Love lies bleeding." This grain, when ground into meal, the Boodigahs appear peculiarly fond of; it is usually eaten raw; sometimes the seed is broiled and ground into flour, mixed with a little cold water, occasionally with milk, and appears to form the staple article of their subsistence.

Poppies are cultivated in considerable quantity, and the old men are rather addicted to the use of opium procured from them.

Garlick and onions are continually cultivated for sale: the onions, though small, are mild and pleasant to the taste.

I am not aware that the cultivation of wheat has yet been attempted by the Boodigahs; some very good specimens were produced by the late Sir W. Rumbold, at his little farm at Billycull. Oats have lately been introduced from seed raised on the Government farm at Kaitie, and I have no doubt will thrive remarkably well.

Some few fruits, and an immense variety of vegetables have been introduced by the European visitants. From some cause, however, whether from the soil being too rich, or want of skill in the cultivation, they are often woody, and want flavour. What seems to prove the want of precaution is, that some of the residents, who have bestowed more care than usual, have succeeded perfectly with almost every description of esculent vegetable to be found in Europe. The list extends to potatoes in great quantity and first-rate quality; cabbage, cauliflower, savoys, French beans, spinage, peas, lettuces, beet-root, radishes, celery, turnips, carrots, &c. &c. Sea-kale, asparagus, and tomatas are more rare, but nevertheless thrive very well.

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* Amaranthus tristis.

Fruits do not ripen well at Ootacamund; but at Dimhutty and Billycull, I have seen very tolerable plums, peaches, nectarines, apples, citrons, and loquats. Oranges and limes grow wild in great abundance at Orange Valley, and doubtless would be improved by cultivation.

Of the wild products of the hills, the most remarkable are the *Brazil cherry, known in Bengal as the Topara, growing in a curi*ous leafy case, on a small prickly shrub ; the fruit when ripe is of the size of a cherry, of a yellow colour, and an agreeable subacid taste ; it is found in immense profusion.

The hill gooseberry, so named from its strong resemblance in taste (though not in appearance) to a ripe gooseberry ; it grows in prodigious quantities on a small branchy shrub, with short thick dark-green leaves, and makes an excellent preserve.

A small green fruit, very much resembling in appearance and flavour a caper, is used by the burghers as a sort of pickle.

Strawberries and raspberries are in great abundance. The latter in certain situations is uncommonly well flavored. Black or bramble berries are also very common.

The Orchis Mascula, from the root of which the well known Salepi Misree is obtained, is found in considerable quantities on the Neddimulla Hills and near Neddiwuttum. Several other plants resembling the genus Orchis, and with roots of the same description, are found in and about Ootacamund.

Of forest trees, there are an immense abundance and variety, many doubtless valuable, but very few of them have as yet been turned to any account.

The camphor tree, according to Baron Hügel, is to be found near Orange Valley—if in any quantity, it must prove valuable.

A considerable forest of Teak was lately discovered in the Coonoor Ghât, and has been reserved for the use of Government.

The Chumpanee, a small tree with crooked stem and long lanceolate leaves, disposed *in* bunches, furnishes, when seasoned, a very hard tough and solid wood, of a blueish white colour, with deep blue streaks ; it appears to possess all the valuable qualities of teak, and is commonly used for rafters, door-frames, bitels, and other similar purposes ; it is unfortunately not very common.

The Darchenee, or bastard cinnamon, which is very common, and grows to a large size, furnishes a great quantity of very useful wood, though not equal in strength or durability to the last; it is of a pink or pale reddish color, and may be had in beams of any size.

A third species, known to the natives by the name of Billoo, furnishes a wood of a deep red colour, very heavy and solid, but easily worked; it is said to be less affected by moisture than either of the two former, and proof against insects.

The barberry, which is sufficiently common, produces a wood of a rich golden yellow color, which takes a good polish, and though only found in small stems, would be very well adapted for ornamental furniture, such as chairs, music-stands, &c.

As intimately connected with this subject, a few observations on the capabilities of the hills may not be misapplied.

There appears no doubt, from the experiments which have already been made, and the analogies of climate, that almost every description of European vegetables, fruit, and grain might be advantageously cultivated on the hills. Potatoes in any quantity; oats for feeding horses; barley for brewing* beer, or distilling; Mangel-wurzel, or turnips for feeding cattle, and a host of kitchen vegetables are among the first that occur to us.

Coffee would undoubtedly grow on the slopes of the lower vallies, and Baron Hügel found in considerable abundance near Coonoor the Camellia Japonica, which is said to affect the same soil, climate, and exposure, as some of the more valuable descriptions of the tea plant, from which and other circumstances, he inferred that the latter might be cultivated with advantage. My friend the late Dr. Christie had come to the same conclusion, and commissioned some plants from China, some of which came into my possession after his death, and have been distributed to various parts of the hills for trial.

Lucerne, and Fiorin grass thrive remarkably well. Tobacco of a very superior description (said to have been sown by a Todar) was discovered by two gentlemen of my acquaintance (Messrs. Ashton and Stephenson) on a small hill not far from Ootacamund.

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* No hops have yet been discovered on the hills, but I have seen them growing wild in immense abundance, in a soil and climate nearly analogous, in the province of Kakhetia in Georgia.

If a proper selection of ground were made at Dimhutty, Orange Valley or Billycull, and walls or espaliers erected, fruit of any kind, and in almost any quantity might be raised.

The cultivation of medicinal plants, such as rhubarb, *Conium maculatum, Hyoscyamus niger, &c. &c. would undoubtedly* be highly advantageous. The simple apparatus described in Arnot's Physics for Evaporation sub vacuo might be adopted with great advantage for preparing the extracts of these and similar other plants, now procured at great expence from Europe.

It appears extraordinary that no enterprising individual has thought of curing salt provisions on a large scale on the hills. The climate is undoubtedly favorable, and the circumstance of water-carriage being within 28 miles of the Koondahs by the new pass would facilitate the procuring the necessary quantity of salt, as well as exporting the manufactured article. Hams, tongues, briskets, humps, bacon, &c. of very good quality, cured on the hills, are sold in considerable quantity in the Bazar, as well as prepared in all private families, for home consumption; but it would require the assistance of experienced persons to conduct it on a large scale. The animals (cattle and swine) might be procured in any quantity in the low country round the hills, and might be at first driven up as required, until a proper breeding and grazing establishment were formed.

I am hardly sufficient master of the subject to say whether the breeding of horses might be advantageously pursued. Even under the most favourable circumstances, this is a precarious speculation; but judging from the temper, spirits, and condition of those which have been imported, they thrive to admiration.

Breeding cattle and sheep are liable to the same objection of uncertainty, but not to an equal extent, as the very fine breed of buffaloes found on the hills is a proof that they can be naturalized; European sheep require much care at first, to preserve them from the wet, but after a short acclimatisation, thrive very well. The use of salt mixed with their food is found to be an admirable preservative against the moisture of the climate.

The late Dr. Christie had made preparations for manufacturing ice on a large scale, storing it, and afterwards conveying it to Madras, Bombay, and Calcutta. His calculation was founded on the supposition of a certain quantity being equivalent to so much saltpetre in cooling wine, beer, &c. and he expected to sell this equivalent quantity at two-thirds of the price of the saltpetre, and, all expences paid, to realise a profit of 15 per cent. If, as appears by an article in a late Calcutta paper, ice sent from America to Bengal returns a profit, it appears almost certain that such a speculation on the Nelgherries could not fail of success.

The above-mentioned speculations present only a question of probable profit or loss to the individuals undertaking them ; but there are many other points connected with the capabilities of the hills, which involve considerations of great moral and political importance. To these I shall do no more than allude, in the hope that the subject may be taken up by those who are better qualified to do it justice.

To say nothing of the eligibility of this climate and position for the location of European troops, and the instruction of European recruits, it has occurred to many of our more intelligent visitors, that a considerable portion of the daily increasing Indo-British population might be with advantage disposed of on the hills, where their intelligence and activity might be turned to account in a variety of ways for which there is little or no scope in the low country.

In the various discussions which have lately been entered into on the difficult subject of colonization of Europeans in India, it has been frequently stated as an objection, that the climate is unfavorable to the exertion of skill and enterprise, from its physical effects on the European constitution. It appears to my humble judgment, that as regards the south of India at least, this objection might be got over, by the colonists establishing their head-quarters on the hills, to which they might retreat for repose and refreshment, when their presence was not required in the low country—and where their families at least would enjoy an European climate, and in some degree the benefit of an English education*.

The location of pensioners on the hills is attended with many difficulties. The habits of this class of men are not the best in the world, and but rarely offer an example of industry or sobriety, while the effects of their long residence in the low country, added to their (generally) advanced age, render them in most instances insensible to the advantages of the change.

* See Prospectus of the Church Missionary School, in the Appendix.

BOTANY.

The Botanical productions of the hills are of the richest and most varied description, but they are a field as yet almost unexplored. From the peculiar nature of the climate, and their position betwixt a tropical and temperate zone, they partake of the advantages of both; and plants of the most opposite descriptions, from the luxuriant produce of a rich soil, under the influence of a tropical sun, up to the small Alpine shrub which niches itself in an angle of the bare rock, all may be found in the compass of a single day's journey. Another difficulty in the way of a collector, whose leisure does not admit of his passing a considerable time on the hills, is, that there are plants coming into flower every month of the year, and it would require the labour of many seasons, added to indefatigable industry, to exhaust the Flora.

In the Appendix will be found a catalogue of plants examined by my friend the Reverend Mr. Schmid, extending to upwards of 400 new species, and to which he is making daily additions.

The following observations on the general characters of the vegetation are from the pen of my friend Baron Hügel, an officer of the Imperial Austrian Army, who has travelled very extensively over all Europe, and great part of Asia, in the pursuit of Botanical knowledge, and who paid the hills a hurried visit in March last. It is much to be regretted, that his ulterior plans did not admit of his making a longer stay, as he found much to interest him, and we had reason to expect some valuable information on the capabilities of the hills from this talented individual, who, to a profound knowledge of the technicology of Botany, unites an intimate acquaintance with the practical application of the science to Horticulture and all other useful purposes.

" Having been only a few weeks on the Neelgherry Hills, although during that time I traversed them in all directions, I should not be able to give an account of the hill country I have explored, without the kindness of the Rev. B. Schmid, who having resided at Ootacamund a long time, has put his Herbarium at my disposal. Unfortunately the greatest part of the plants being new or described only of late, more time and books would have been required than a traveller possesses, in order to pronounce on their species without the risque of exposing myself. The following pages contain therefore only general remarks on the vegetation and families of plants:

"In every part of the globe, the vegetation, considered as a 'tout ensemble,' has its peculiar characters, or, as I would say, physiognomy, which usually changes only at great intervals, and one part of the features of which forms a portion of the physiognomy of the next. Thus we see some species, remarkable for their size, even in Norway, and in the uttermost northern boundaries of vegetation, form a part of that of the centre of Europe; whilst the plants which most frequently inhabit these woods are found in the north of Italy, and some of them even both in Italy and in Sicily, countries which, notwithstanding, differ from each other infinitely in their physiognomy.

"The same is the case, and even in a higher degree, with respect to tropical countries; the plants change more according to the soil, and the earth on which they grow, than according to the distance. To prove this, I would mention India, in which country, wherever the same soil is found, one may be sure to find not only the same families, but also the same species. I forbear mentioning instances, as they would prove too numerous. The high mountains throughout the globe possess a vegetation entirely different from that of the low country, and even from that of the lower mountains; but which present every where not only the same species, but often the same families, and always the same forms.

"It was very interesting to me to examine the Neelgherry Hills, which perhaps cannot be classed among the Alps of our globe, but which have a vegetation quite Alpine, embellished and enlarged by the tropical sun and the perpendicular beams of light; nearly all the forms of plants of the European Alps, with few exceptions, are *found also* here. A great number of families and genera are similar, but not one single species which I had occasion to observe is the same, with the exception perhaps of Viola canina, which might be one of those subvariations, as Viola canina, Alpina, Pyreniana, neglecta, &c. which I have not sufficiently compared. Berberis, so similar to B. communis, differs from it; it is perhaps B. vulgaris Nigra of the Levant. Most other plants, as Rubus Fruticosus, Fragaria silvestris, &c. have been called so by persons who suffered themselves to be deceived by a superficial (slight) resemblance.

"It would be very difficult for me, without an Herbarium, without books, and even engravings, to speak positively, and to state that the Neelgherries have no species in common with any other part of the globe. For instance, I think the Mahonia D. C. which grows there, is the Fascicularis of America, &c.; but the difference in the physiognomy of vegetation is as great as between that of Tornaea in Sweden and that of Naples.

"The family of the Compositæ is pretty numerous in the Neelgherries, as is the case on all high mountains, particularly the genus Gnaphalium; the family of the Ericeæ veræ is found only in those genera which approach nearest to Vaccinium; some species of Ranuncularia: two of Clematis, one Magnoliaceæ, (I think of the subdivision of Michelia, but not Champaca;) some fine species of the Cruxiferæ: I can only say, that with regard to all these, the plants which I had it in my power to examine and compare are different from similar species found elsewhere.

"A remarkable conformity exists between the Neelgherry plants and those of the table-land and on the mountains of Nowera Ellia in Ceylon: this last place has many species entirely the same with those of the Neelgherries; many are but subvariations of the same species, that is, Rhododendron Arboreum differs but little; the Corolla is always of one colour, a deep red without the least spot.

"Ficarræ, none*; Umbelliferæ, some splendid species; Caprifoliaceæ, some species: two Gentianeæ, one of them with a beautiful blue flower, Exacum bicolor? Bignonia in the vallies, a beautiful species. Instead of the Cistineæ of our mountains, we have here beautiful Melastomacea, which crown the highest mountains. Drosera, one†; Malvacea, some species; Geraniaceæ, none‡; some species are found on Nowera Ellia; Hypericea, three. The Leguminosa are not numerous, and the genus Crotaleria, so abundant in India, producing here colossal plants, comprehends two-thirds of all the Leguminosa. A fine species of Rosa, with large white§ flowers. One Passiflora; beautiful Cucurbitaceæ; a beautiful species of the Crassulacea. A colossal species of Solanum; some species of

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* One in Orange Valley since found. (S.)

† About Ootacamund we have two. (S.)

‡ One common about Ootacamund. (S.)

§ A fine red species also. (S.)

Labiatæ; a few Verbenacea and Euphorbiaceæ. Of the Urtica family only one, but in several beautiful varieties. None of the Coniferæ. One Salix; some beautiful and well distinguished Orchidea, bulbous. No Amaryllideæ. Few Asphodeliæ. One Tulipaceæ. A beautiful Lilium, with one flower; several species of the Commelinea.

"The season being unfavorable for the Gramineæ, when I was on the Neelgherries, I can say nothing of them*; but, on the contrary, nothing can be finer than the Filices, the species of which are endless, from the fern *tree* to the smallest plants. Fungi do not exist at all here†.

"To come back to the physiognomy of the vegetation, it is beautiful, smiling, flourishing; its expression is that of health, of a reproductive vigour, which, strong as it is, remains always noble and elegant.

"Having descended the Neelgherries on all sides, as far as the *tropical regions*, I have *found a very singular thing, viz. a middle* region between the Neelgherry Hills, and the usual vegetation of Malabar or Mysore, and which takes the place of our Sub-Alpine vegetation; I have found there several magnificent plants often of colossal size, and which vary greatly in the different passes of Goodaloor, of Kotagherry (or Orange Valley), Coonoor, and Koondah; in short, the Botanist finds in this wonderful country attractions which few other parts of the earth can offer him, and which a delightful climate permits of his procuring at the expence of excursions which would be fatiguing even in Europe, but which here only add to his enjoyment."

ZOOLOGY.

This branch of natural history, as illustrated on the hills, offers several peculiarities to the lover of the science, but my limited opportunities and want of leisure to collect and observe prevent me from offering more than a very rough sketch of the Fauna Neelgherriensis. Of the larger animals, the elephant, though numerous in the surrounding jungle, and occasionally seen in the passes, is not found on the table-land.

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* Grapes are common at Kotagherry and Coonoor. (S.)

† Baron Hügel saw none at the season he was here, but they were common at other times of the year.

The royal tiger is an occasional visitant, and is as usual destructive, but they seem to lose part of their ferocity in this cold climate, and in general fall an easy prey to the sportsman.

Cheetas are more numerous; one has been in possession of a thick wood in one corner of the cantonment for some years, and now and then carries off a dog, or calf, or some animal of similar size.

Jackals are very numerous, and wild dogs* not uncommon; neither wolves nor foxes are met with.

An animal nearly resembling the Martin is sometimes seen; as also the Polecat.

Bears of a large black species are frequently met with; they appear harmless, though sufficiently fierce when wounded or otherwise roused. They are most common in the early part of the monsoon, when they ascend in pursuit of a large brown beetle then very numerous; they also feed on roots, and the ground is often turned up by them to a considerable extent.

Under the head of Game may be classed the following:

Wild hogs; at certain seasons to be met with in plenty, but neither so fat nor so well flavored as the sugar-cane hog of the low country. The Samber or elk, as it is universally called, though belonging to the deer tribe. It is the Cerous Aristotelis, or black Rusa of Cuvier, and attains a considerable size, the antlers of a specimen now before me being three feet long. It is a large, bulky animal, rather heavy to appearance, but moves with considerable rapidity. The flesh is coarse and tasteless, but the head makes excellent soup. They are met with in considerable herds, and generally frequent the larger woods; when caught young, they are easily domesticated. The usual way of hunting them is to beat the woods with dogs or beaters, and the sportsmen being posted at equal distances round the outskirts of the wood, they are shot when they break to make their escape from the dogs. They are very tenacious of life, and often carry off 8 or 10 balls when not struck in a vital part. The skin is excessively tough and thick, and when properly prepared, makes excellent mocassims or mud boots.

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* I am informed by competent judges, that the animal so called on the hills is not a genuine wild dog, but a sort of nondescript, partaking of the dog, the wolf, and the fox, all of which it resembles in one or more points. They are frequently seen hunting elks, deer, &c. in packs of 8, 10, or 12.

A singular and rather rare animal is known under the name of jungle sheep, which is however a misnomer, as they are true deer, and of the sub-genus Stylocerus; they evidently belong to the tribe described in Cuvier under the name Muntjak, but I am at a loss whether to class them as Cervus Muntjak (Kijang) or Cervus moschatus (Nepaul Muntjak.) Their principal peculiarity is a sort of process, 2 or 3 inches long, growing out of the skull, covered with the skin; and into which the horns are inserted, the process being continued down to the nose. They are rather scarce, being found in pairs, and very shy and difficult to approach. Their flesh is very dark-colored, and very delicate eating, partaking of that of hare and deer, but superior to both. It approaches more nearly in appearance and flavour to that of the wild sheep of Persia than any other game I have met with.

Another animal, not usually met with nearer than the Himalaya, is the Chamois, as it is called, but which is a species of Ibex: not having seen a specimen of the male, except at a distance, I am unable to pronounce upon its exact specific name, but it appears to approach more nearly to the Capra Caucasica than the Capra Ibex of Cuvier. The specimen in my possession is a female, three feet three inches high, with annulated horns, 10 inches long, of a triangular form; the acute angle forwards, the base of the horns above the orbits nearly approximated, then bending upwards, outwards, backwards, and downwards, in a regular curve. The hair long, mixed with wool of a deep ash-grey colour throughout, darker on the back, which has a black streak down the centre and lighter on the belly, with a whitish streak down the hind part of the shanks; the hooves strong, deeply divided, and supporting a strong upright pastern.

The male at a distance appears at least six inches taller, nearly black, with very large knotted horns, and a long black or brown beard. They are met with in large herds in the most inaccessible parts of the Koondahs; are exceedingly swift and agile, bounding down the almost perpendicular faces of the rocks with the utmost ease, and are very shy and difficult of approach. The flesh is dark-colored, and though fine grained, very tasteless.

Hares are numerous all over the hills, principally among the bushes; and in the cold weather, approach the gardens and enclosures in the cantonment. They are dark-colored and very large, quite as much so as an English hare, and are excellent eating.

Porcupines are exceedingly numerous, and very destructive to gardens; they differ considerably from those found in the low country, are much larger, and the flesh remarkably well-tasted.

The otter has been seen in the Pycarra river.

Of domesticated animals, the only one which merits notice is the buffaloe, which is kept in great numbers and of a fine breed, principally by the Todars. The common cow is of a very small breed. Sheep do not thrive well at first, probably from the wet and change of pasture, but after being acclimatized become very fat and well-tasted.

Dogs of every description appear quite at home on the hills; the Newfoundland in particular acquires great size and beauty, and retains all his noble faculties in perfection.

Of the feathered tribe, the most remarkable are:

Woodcocks, which, though not numerous, afford admirable sport to those acquainted with their haunts; they are not large, seldom exceeding 11 ounces, but are excellent eating. They come in at the end of October or beginning of November, and disappear in March.

Snipes are large and well-flavored; they are not numerous, but a tolerable shot will kill five or six brace in a forenoon. They come in September and are seldom found after April. That beautiful bird, the solitary snipe (Scolopax major), is occasionally shot on the hills.

Jungle fowls are very numerous, and very delicate, as are spurfowl. Partridges are rare, and are probably imported. Quails are common in the lower parts of the hills.

An immense variety of hawks are every where to be met with, two of them are particularly beautiful, one milk-white, with a large black mark between the wings, and one of a cream colour. A large black eagle is occasionally met with; an immense horned owl, and many species of a smaller size may be numbered among the predatory birds.

The English black-bird is very common, as is the thrush, the wren, and the lark, and a great variety of woodpeckers. I have also observed a very beautiful kingfisher. The imperial pigeon and blue wood-pigeon and dove are common, as are land larks and a species of green plover or peewit.

Of fish I have never seen any but a very small species, but I am informed that some of considerable size have been caught near Mallkoondah, in the deep pools of the river skirting the Koondahs. Crabs are common in all the brooks.

Reptiles are not in great variety—a very pretty small green snake (perfectly harmless) is common in the dry weather, and some suspicious-looking species, said by the natives to be poisonous, have been seen about the Ghâts. Scorpions and centipedes are unknown. Frogs and toads are common, as also one or two small species of lizards.

Insects are fortunately rare, and not in great variety. Mosquitoes are occasionally seen, but never bite. A large brown beetle is very common at certain seasons—their larvæ are very destructive in the gardens. White ants are unknown, and the black ant is only found about the Ghâts. The only animal of this tribe which is at all troublesome is the flea, which is very numerous in the early part of the monsoon. They are put to flight by an infusion of the root of a plant called by the natives Wassumboo, (Acorus calamus,) which is indigenous to the hills.

INHABITANTS.

After the minute, accurate, and comprehensive account of the inhabitants of the Neelgherries already laid before the world by Captain Harkness*, it would be presumptuous in me to offer any remarks on this subject; and to his valuable work, therefore, I beg to refer my readers, for full information with regard to the different tribes, particularly that most singular and interesting people the Todars, who are undoubtedly the aborigines of the soil, and in every point of view, one of the most extraordinary races to be met with in India. He enumerates four other classes, the Boodigahs or cultivators, the Kothurs, who are the artisans of the hills, and the Erulars and Coorumbars, who inhabit the jungles on the slopes of the hills, and are little better than savages, in the very lowest stage of humanity.

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* Description of a singular aboriginal race, inhabiting the summits of the Neelgherry Hills, by Captain H. Harkness, Madras Army, London, 1832.

EFFECTS OF THE CLIMATE

ON

THE EUROPEAN CONSTITUTION

SOUND AND IMPAIRED.

EFFECTS ON THE SOUND CONSTITUTION.

From the preceding account of the climate, it follows almost as a matter of course that it should be perfectly congenial to an European in sound health. Such is in fact the case. The principal inconvenience experienced by people on first ascending the Ghâts, is a slight degree of tightness in the chest, and oppression of breathing, caused by the rarefaction of the air; but this is neither universal nor of long continuance.

Some people are also at first affected with sleeplessness, occasioned by the nervous system being too highly stimulated, principally by the repulsion of blood from the surface, and possibly also by its being in a higher state of oxygenation (?).

The difference of temperature is seldom complained of by any but such as from a long residence in a warm climate have become so Indianized both in their feelings, constitution, and habits, as to be unable to bear the slightest approach to an European climate. Individuals so unhappily circumstanced have little comfort to look for at home, and can scarcely hope to benefit by the hills, the charm of which is their close resemblance to England. A very short residence, generally, perfectly reconciles people in health to the change, and one of the most remarkable effects of it is, the capability of bearing fatigue. Men who, in the low country, though having nothing to complain of, were in such a state of relaxation, as to feel their morning " constitutional" a task and a bore, think little of being eight or ten hours in the open air on the hills, and that for several days in succession, the only effect of the

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exercise being an increase of appetite and spirits, and capability of exertion.

If any proof indeed were wanted of the perfect adaptation of the climate to our constitution, it would be sufficient to look at the European children, whose rosy chubby cheeks, sparkling eyes, and buoyant spirits, form a pleasing contrast with the pale, languid, irritable-looking little wretches one is so often doomed to see dying by inches in the low country.

Females are in general less favorably impressed with the climate than those of the other sex. The indolent habits of life acquired by them in the low country, the almost universal derangement of their system, consequent upon exposure to a constant high temperature, and the susceptibility of atmospherical impressions natural to their highly mobile temperament, sufficiently account for this circumstance; though I fear it must now and then be attributed to the moral effect of a quiet secluded life, as contrasted with the brilliant, though heartless society they are accustomed to at most of the large stations in India. Allowing, however, a longer period of acclimatization, they become quite reconciled to it in the end; and the effect on their health, appearance, and spirits is quite as decided as in the stronger-marked, but less impressible characteristics of the other sex. It not unfrequently happens, that residents in the low country, who visit the hills for a short time on business or pleasure, are disappointed in their pleasurable anticipations, and form an extremely unjust and unfavorable opinion of them. Many circumstances contribute to this hasty judgment; making no adequate preparations for the great and sudden change of climate, they find themselves very uncomfortably situated as regards clothing, houses, servants, and the thousand etceteras essential to comfort in a cold climate; and without giving themselves time to form a more accurate opinion, they leave us unfavorably impressed with every thing they have seen. Upon the whole, we can scarcely be surprised at this, when we every day see our brethren returning from Europe with complaints of the discomfort and annoyance they have undergone from the complete change of habits, feelings, &c. forced upon them while at home; and I would protest against all such ill-grounded and hastily-formed opinions as much in the one case as in the other.

Let visitors prepare themselves by proper clothing for the change to a cold climate, take care to get themselves settled in a comfortable house, and see to the comfort of their servants, &c. and I will answer for their quitting the hills with only one wish, that of revisiting them as soon and for as long as possible.

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EFFECTS ON CONVALESCENTS AND ON DIEASE*.

A difficulty naturally presents itself in discussing the effects of the climate on the European constitution, when impaired by disease or long residence in India, to avoid technicalities and render a subject so purely professional, interesting, and instructive, to the general reader. With a view to avoid as much as possible this difficulty, I shall content myself, after premising a very few general observations and hints to invalids on their first arrival, with very briefly stating the results of our experience in the more important Indian diseases, and as immediately deduced from this, with making a classification of those which are likely to benefit by immediate change to the hills, as distinguished from others which require the premisal of a sea-voyage.

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SECTION 1.

GENERAL OBSERVATIONS.

On Change of Climate.

The effects of change of air in disease are too well known, and too generally admitted to require discussion here. We are as yet totally ignorant of the manner in which the favorable change is operated, and in the present state of our chemical knowledge, unable as we are to detect the difference between the heated impure steam of a crowded hospital, and the health-inspiring breeze of the mountain top, we are likely to remain in ignorance. Whether the cause be an actual difference in the chemical constitution of the air, or merely that there has been a change made from the self-defiled atmosphere surrounding the sick couch to one as yet free from the exhalations of disease, are points which we are yet unable to pronounce upon, though we see it every day proved by the fact of a change even though from a lower to a higher situation, from a purer to a less pure atmosphere, operating the most miraculous cures in cases to all human appearance hopeless. Much must be doubtless attributed to the moral effects of a removal from the contemplation of objects associated in the mind of the patient with images of suffering and death*; but still so decided is the benefit derived, that we are compelled to acknowledge, though unable to account philosophically for the cause, that change of air is one of the most powerful curative means we possess. And when this change involves a variation of temperature and moisture, (two conditions of the air for the agency of which we can fully account) to any considerable or remarkable degree, we are justified in anticipating the most marked advantage from it. The effects of a change to an atmosphere of nearly the same condition are at best transitory, and after the system becomes habituated to it, a relapse is generally the consequence. When, however, the transition is so great, as to produce a general re-action of the system, we may hope not only to find the diseased action checked, but permanently altered: and this is for many reasons still more decidedly the case when the condition of the new atmosphere approaches to that habitual to the patient; in other words, to that of his natal air. That the change from the low country to the mountain air of the Neelgherries, is nearly equivalent to that of a return to Great Britain, will scarcely be questioned on perusing the preceding account of the meteorology of the hills; and we are therefore bound to anticipate as good effects from the one, as from the other, provided we make allowances for the countervailing effects of the *suddenness* of the *transition*.

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* These remarks, with a few additions and corrections, are extracted from a paper read before the Medical and Physical Society of Calcutta in 1831. Further experience has fully confirmed the views therein expressed, and has enabled me to speak with more confidence on certain points.

In returning to Europe, besides the inappreciable moral influence of a return to friends, home, and country, the patient has the benefit of a prolonged sea-voyage, a curative agent in many instances of first-rate importance, and he has the further advantage of a gradual and twice-repeated change of climate. While, in ascending the hills, he has to undergo the transition from the temperature of Madras to that of the south of England, in the course *of a single day, sometimes of a few hours,* much as if he were to ascend from the Coromandel Coast in a balloon in the afternoon of a red hot day in May, and land in the course of five or six hours on the coast of Devonshire.

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* As, for instance, in a change of rooms, which in sickness is often felt as a great relief from gloomy associations, and the ennui always attendant on long confinement.

This sudden transition, where the constitution is prepared for it, has its advantages in a great majority of cases:

1st. By exciting a healthy re-action in the system.

2nd. By exciting a new action, which overcomes the diseased one.

3rd. By restoring the healthy powers of the constitution, and the general tone of the viscera, particularly the digestive organs.

4th. By removing the eternally recurring causes of irritation in the low country, such as heat, moisture, closeness, &c.

5th. By breaking the habit of disease; a consideration of vast importance in some of the most obstinate forms of Indian disease. Fever is the best illustration of this fact; the tendency to a recurrance of febrile paroxysms is increased by repetition to a degree totally unconnected with the debility or extent of organic lesion produced, and only to be accounted for by the all-powerful influence of habit on the constitution. In one of the most obstinate forms of this disease, Intermittent Fever, it is frequently sufficient to put off or change the period of access, to produce a speedy cure, and in most cases, the transition from one type to another, from a Tertian to a Quotidian for instance; in other words, "the change *of habit," is considered a salutary indication.*

On the other hand, when the constitution has not sufficient *power to produce this salutary re-action, or what is worse, when the* sudden change of distribution of the circulating mass throws an unusual load on internal *organs unfitted by disease for sustaining* the shock, the effect must be proportionally mischievous, and cases of this description come under the category of diseases which are not curable by a sudden change of climate; or, at least, not until the diseased action is checked, and the powers of the constitution restored by a sea-voyage or residence on the sea-coast.

These positions will perhaps be better understood, when treating of the effects of the climate on Indian diseases, in detail. I have dwelt the more on them, because I conceive that a want of attention to them, or, more correctly perhaps, the general ignorance of the necessity of attending to them, has been the cause of much unnecessary disappointment and depreciation of the curative and restorative powers of the climate. Many cases have been sent to us for treatment, in the last stage of organic disease; others, in which functional derangement had proceeded to such a pitch, that the slightest shock was sufficient to overturn the balance of the constitutional powers; and not a few in which low country habits and length of residence in a hot climate had paralyzed or altered the original European form of the constitution, and rendered a transfer to this climate nearly as uncomfortable to the feelings and detrimental to the feeble remains of vitality, as that of a trembling ship lascar from the hot moist climate of the sea-coast of India to the chops of the English Channel.

In such cases, it is needless to say, that all hopes of a cure, in others words, of a miracle, were futile, and could only end in disappointment; and though increasing acquaintance with the nature and power of the climate is fast leading to a better and more rational selection of cases, it appears somewhat extraordinary that the simple and obvious expedient of consulting some qualified person on the spot (at least in doubtful cases) should not sooner have been had recourse to. With a view to supply this desideratum, I have subjoined a classification of diseases*, proper to be transferred to the hill climate, and which, though far from complete, will, I trust, be found correct as far as it goes, and as such to possess some share of utility.

We shall now notice another important general consideration; the length of time required for the climate to operate beneficially. Here it must be recollected, that the object in all such cases is not only to check or cure the existing disease, but to remove as far as possible the tendency to relapse, unfortunately one of the invariable concomitants of all Indian diseases. This can be effected by time alone. Long after all symptoms of actual disease have disappeared, the tendency to relapse on the re-application of the exciting causes will remain; and time alone, by restoring the tone of the constitution generally, and the weakened organs in particular, can remove this proneness to a return of the original disease.

It is not easy to fix a period for this consummation of the cure, even in the most general terms, so much must depend on the nature of the individual case, and of the disease, the time it has lasted, the age, sex, constitution of the patient; as a general rule, however, it may be laid down, that a patient, who resorts to the hills convalescent from any of the more serious forms of Indian disease, should not quit the hills until he has been at least six or seven months free from all symptoms of actual disease.

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* See Sec. IV.

An important consideration, as connected with the hills, but which has not yet met with the attention it deserves, is the prophylactic (preventive) powers of the climate. No axiom in medicine is more firmly established than that of "Venienti occurrite morbo," and I shall be disappointed if this is not hereafter discovered to be applicable in the most extended degree to the Neelgherries.

It must have occurred to even the most casual observer to have seen numerous instances of young men on their first arrival in the country attacked by some of the common Indian complaints, which yield readily to the usual means, but are sure to re-appear at the end of a very short time; until after a succession of similar relapses, the unlucky subject is either forced to quit the country to recover his health, or perhaps finds a release from reiterated sufferings in a premature grave. It is by these slight but repeated attacks in particular that is laid the foundation of a whole catalogue of visceral diseases, parabysmic enlargements, organic derangement, scirrhus, &c. and even under the most favorable circumstances, such a case can rarely if ever be converted into an efficient soldier. Were he however, after his first or second attack, transferred to a cool healthy climate, and left there till the natural powers of his constitution had overcome this predisposition to disease, are we not justified in the expectation, that his amended health, and in the case of a private soldier, improved habits might enable him to resist exposure to the same exciting causes? I have seen numerous examples of young officers, whose early period of service was a series of constant illness and suffering; but who having been sent to Europe before the formation of distinct organic disease, have returned to India with constitutions completely renovated, and have afterwards proved to be among the most zealous, active, and efficient soldiers, of whom our ranks can boast. Of this fact (without however pretending to the credit of the *last* part of the exemplification) I may cite my own case as one of the most striking examples.

I am, I confess, sanguine as to the result of a similar experiment, made in incipient disease, by sending young men to the

Neelgherries for a time, with the view of checking the predisposition to disease so often manifested shortly after their first arrival in the country; and I consider the plan particularly applicable to the cases of young European soldiers, for whom the alternative of being sent to Europe for their health is nearly if not wholly out of the question.

SECTION 2.

HINTS TO INVALIDS.

The first most obvious effect of the climate of the hills on an invalid is to repel the blood from the surface. It appears from the preceding remarks on climate that the average temperature of Ootacamund is 58°, while that of the low country on the Coimbatoor side is probably 86° or 88°, and on the Mysore side, 82° or 84°; consequently the difference of temperature is on the average from 24° to 30°. But if we suppose an invalid to arrive in the dry season at Goodaloor or Mootapollium in the morning, he will find the thermometer at all events 88°, probably 90°, and *the same evening, on reaching Ootacamund,* it will descend to 45°, perhaps to 42°, *making a vicissitude of from 43° to 46°.* The immediate consequence of such a decided change of temperature, aided by the superior dryness of the air in the higher situation, will be to constrict the vessels of the skin, to check perspiration, and transpiration, and throw the blood on the internal organs; and should any of these be weakened by previous disease, the consequence will be a greater or less degree of accumulation of blood in the weak viscus or congestion, as it is technically called. From the close sympathy between the skin and liver, the latter is the organ most frequently affected in this way; but the bowels, head, and lungs frequently partake of this unequal distribution of the circulation, the effect being added to in the lungs by the difficulty of respiration produced by the rarefaction of the air.

When no actual organic disease exists, and when the constitutional powers are not permanently debilitated, nature soon restores the balance: a re-action takes place; the liver secretes more bile, the superfluous fluid is carried off from the bowels by a mild diarrhœa, and from the lungs by copious expectoration, more particularly if this salutary process is assisted by care on the part of the invalid himself, warm clothing, &c. and by the exhibition of mild aperient remedies, such as the Plummer's pill*, which has the invaluable property of exciting the action of the liver and bowels, and determining to the skin at the same time.

It is only in cases of actual organic disease, or when the debility of the constitution is so great as to prevent re-action, that any serious or permanent mischief is to be dreaded from the congestion of the viscera. Cases of the former description should not approach the hills at all; and the latter should if possible premise a sea voyage or residence on the sea-coast, until convalescence is somewhat advanced: and in these, as well as the more aggravated cases of what is called by medical men functional derangement of the viscera, the time selected for ascending the hills, if a choice exists, should be in April or May, when the comparative warmth and moisture of the air naturally lessens the risk of a check to the action of the skin, and consequently of internal congestion. In all such cases also, it is prudent to try the effect of a short previous residence at Kotagherry or Coonoor, the milder climate of which renders the change less abrupt, and will generally be found for many reasons to agree better with delicate invalids. Under the most favorable circumstances, those who are unable to take much exercise in the open air will derive more benefit from the climate of Dimhutty or Coonoor, where the temperature throughout the year is so mild as scarcely to necessitate the use of a fire.

The next point requiring the attention of invalids at first is the circumstance of their digestive powers seldom keeping pace with the increase of appetite produced by the change. This is especially the case with vegetables, a tempting array of which is placed before the stranger, and but too often induce him to forget the laws of diet, laws as immutable as those of the "Medes and Persians," and any infraction of which is sure to be followed by retributive punishment, in the shape of a violent attack of dyspepsia, succeeded by colic diarrhœa, and not unfrequently dysentery. Luckily the cause is here within reach, and a little prudence at first is sufficient to obviate all mischief.

Invalids generally suffer in a greater degree from the sleeplessness before mentioned, and are relieved by the same means as

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[*] Composed of calomel in small quantity, antimony, and guaiac.

those recommended to obviate congestion; should these prove insufficient, a little Hyoscyamus may with advantage be added to the Plummer's pill.

Head-ache is by no means an unfrequent complaint on the part of strangers; when it depends on undue determination of blood to the organ, much caution is required. Kotaghery is in such cases to be preferred to Ootacamund, and no time lost in consulting a medical man. In ordinary cases, a little aperient medicine, moderate diet, and avoidance of any cause which accelerates the circulation, such as violent exercise, ascending hills, and exposure to the sun, seldom fail to remove all unpleasant feelings in a few days.

Persons who have suffered from fever should be cautious to avoid passing through the jungle at the foot of the hills during the night; and if unluckily detained in them after sun-set, they should on their arrival have recourse to a course of purgatives, followed by Quinine in small doses. (See below, "Jungle Fever," and remarks prefixed to table of routes.)

In every instance of whatever description, warm clothing is of vital importance. Medical men are now generally agreed, that even in the low country a light flannel banian* is of service in maintaining the action of the skin, preventing chills, &c., and *à fortiori*, it is *indispensable on the hills*; every invalid indeed should, as he values his life, be provided with a good stock of flannel banians, cummerbunds, drawers, and worsted stockings, in which he should proceed to array himself from head to foot before ascending the Ghât. Too much cannot be said in praise of the flannel cummerbund†. I have seen obstinate bowel complaints cured by its adoption alone, and it is no less essential to females.

Cold feet is a very general complaint among new comers, particularly ladies; the remedy is simple: the adoption of lamb's wool or worsted stockings, which ought to form part of the stock of every visitor, whether in good or indifferent health.

A stock of stout shoes and boots should not be forgotten. In the wettest weather, a person watching his opportunity, and armed with thick-soled shoes, may generally contrive to get a dry walk in the intervals between the showers, not forgetting however the precaution of changing both shoes and stockings on his return home*.

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* Jacket or shirt.

† Belt; the best way of making it is, to have strings attached to it, so as to be firmly tied round the middle and double over.

For some time after arriving on the hills, invalids should avoid exposure to the night air, and should indeed never be out after sun-set. The reduction of temperature, which follows the disappearance of the sun, must be felt to be understood, and no one who values his health should expose himself to the risk of cold in quitting a crowded room or an evening party to return home after nightfall. Early rising is also for the same reason decidedly objectionable. In the low country, one is compelled to be up with the sun, to get a mouthful of fresh air; but on the hills, in an European climate, this is neither necessary nor prudent, and the invalid should wait till the sun has attained sufficient height to drive away the cold and moisture of the night, before he ventures out, taking care however to return in time to avoid the powerful effects of the sun's direct rays, which are greatest about 9 or ½ past 9 A. M.

The diet of invalids on the first ascent must of course in a great degree be regulated by circumstances depending on the precise nature of each individual case. In general, however, they ought to adhere to light animal food, with bread or biscuit, eschewing vegetables, pastry, cheese, &c.: for drink, port or sherry is preferable to the lighter wines; beer is unnecessary, and only loads the stomach. As a general principle, invalids ought to diminish the quantity of stimulus in the shape of wine, spirits, or beer, until completely acclimatized. It is an undoubted fact, that a comparatively small quantity of any of these articles produces head-aches and other febrile feelings, probably from increasing the existing tendency to accelerated circulation of the blood.

In regulating their hours, regard must of course be had to their previous habits of life; most residents have gradually adopted English hours, as most convenient, and allowing more time for business; but invalids will do well, for some time at least, to breakfast early, dine at 3 or ½ past 3, and finish the day with tea or something equally light.

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* It is not a little remarkable that most people who adopt this or similar precautions are but little affected by the wet on the hills, though unable to bear it in the low country. When lately in Europe, for the recovery of my health, I never had my feet wet for however short a time, without an attack of diarrhœa. On the hills, it often happens that I am unavoidably wet through twice or thrice a day during the monsoons; but taking the precaution of shifting my clothes as speedily as practicable, I have never suffered the slightest inconvenience.

Exercise is another essential part of regimen. Invalids should at first be cautious to avoid exposure to the sun, and exercise should be taken so as not to produce fatigue, but only to excite a gentle action on the skin. Riding, as being less exciting, and less fatiguing than walking, is to be preferred at first, and a pony to a horse, on the same principle. Walking has another disadvantage, that it accelerates the circulation, and increases the feeling of tightness and constriction in the chest; it also increases the liability to chills, as after toiling up a steep ascent, and getting well heated, one is frequently met by a current of cold air, producing immediate constriction of the vessels of the skin. When the invalid has become acclimatized, he should gradually increase his quantum of exercise; and when fairly recovered, should pass as much of the daylight in the open air as his strength will admit.

The effects of the different seasons on diseases are by no means unimportant: very few invalids can bear with impunity the great difference of temperature between day and night, and the excessively dry atmosphere of the cold season, especially during the prevalence of the strong N. E. winds. Exposure to the sun also, at this season, is generally attended with bad effects. Upon the whole, the monsoon season (notwithstanding its comparative dampness) is, from its greater equability of temperature, the absence of cold winds, and the cloudy sky, admitting of exercise being taken at every dry interval, infinitely the best season for commencing the treatment of a chronic complaint, and where circumstances admit of a choice, I should prefer April as the period for ascending the hills. As the succession of the seasons differs considerably at Dimhutty and Ootacamund, it is possible, by well-timed changes from one to the other, to avoid much of the unpleasant weather at both, the only bar to which is the paucity of accommodation at Dimhutty, an evil which I earnestly desire to see remedied. The first step towards it has been made through the liberality of Mr. Lushington, in placing his bungalows there at the disposal of sick officers. I am now in the constant habit of transferring the more delicate classes of invalids to Dimhutty, whenever I perceive that they are retrograding or stationary at Ootacamund; and the benefit derived has been of the most marked description, particularly at the commencement of the monsoon, when the highly electrical state of the atmosphere occasions much suffering to a majority of our patients.

SECTION 3.

EFFECTS OF THE CLIMATE ON INDIAN DISEASES, IN DETAIL.

The following observations are the result of our experience in more than 300 cases of the most varied description. Of these, 120 were European soldiers, treated in the convalescent depôt, and 132 were officers, civil and military. Returns are subjoined in the Appendix of the nature of the disease and results of the treatment, in these last two classes—and it will be satisfactory to observe, that notwithstanding their being very ill selected (a considerable portion having been utterly unfit for treatment on the hills), the result is on the whole satisfactory—three-fourths of the soldiers, and about the same proportion of the officers (including those remaining), having been cured.

The time at which the sanative effects of the climate begin to appear varies considerably in different diseases, and in different individuals labouring under the same disease. In some, the restoration is immediate and permanent; in others, it is followed by slight relapses, and in a great many cases there is little or no amendment for many months. This is particularly the case with females, upon whom the climate is much longer in producing an effect, than on the other sex, and they derive decidedly more benefit at first from the milder climates of Kotagherry and Coonoor than of Ootacamund. If the accommodation were sufficient, I should be disposed to send all ladies, and a considerable proportion of the severer cases among officers, to Kotagherry, for the first three months.

Sudden changes of weather have, as might be expected, a considerable effect on all the more delicate classes of invalids. Bowel complaints and dysentery are peculiarly affected by a transition from dry to wet weather, but the effect is fortunately in general only transitory, and the monsoon is upon the whole the most favorable season for invalids, probably from its great equability of temperature.

The electrical condition of the atmosphere exercises a very marked influence on most invalids on the hills.

Rheumatism, cephalalgia (head-ache), and nervous complaints are most sensible to its action, and patients affected with these or similar complaints can generally foretel the approach of a thunder-storm, producing a general feeling of uneasiness, and a temporary aggravation of the pains.

The influence of the phases of the moon on the paroxysms of periodical disease has been much disputed, and is still "*sub lite.*" I must confess myself convinced of the truth of the popular opinion, though not to the fullest extent perhaps. Scarcely a case of intermittent fever, contracted in the low country, has come under my observation here, which did not undergo a decided aggravation at the full and change; if the paroxysms were regular at other periods, they were severer and of longer continuance at this; the cold fit being always strongly marked, though often scarcely perceptible in fits occurring in the intervals. The quartan type is that most subject to this mysterious influence, as are the obstinate types known as Seringapatam and Guzerat fevers. I have two instances in my eye at this moment, one, a field officer of the army, who for the last 16 or 18 years has had a regular return of fever every full moon, preceded by violent head-ache; this was originally contracted in Orissa; the other, a civilian of rank, who contracted the disease at Seringapatam 12 years ago, and who experiences a relapse at full and change.

Cephalalgia and hysteria appear also to be subject to this lunar influence, though less distinctly, and in a minor degree. The diseases of children are fewer in number and infinitely less violent in degree than in the low country. Dysentery is of rare occurrence, as are also fever, marasmus, and convulsions. An idea prevails, that teething takes place less favorably on the hills than below, but this is decidedly contrary to my experience, and I consider the mischief, in one or two alleged instances, to have originated in the child's having been weaned too *early*. A similar idea prevails with regard to vaccination, which is said to be more difficult to establish here than elsewhere; this again is entirely owing to the difficulty of procuring good matter*.

Small-pox was said to be formerly common among the aborigines; it has now nearly disappeared. We have vaccinated more than 1,100 of their children within the last two years, and I have never heard of its occurrence among the settlers, whether European or Native.

Measles are rare, I have never seen an instance of it, or scarlatina. Hooping cough is more common, but generally mild, and is readily cured by a change to Kotagherry and Coonoor, or vice versa. Of croup, I have only seen one case.

In short, European children are peculiarly healthy, and thrive most remarkably on the hills.

The effects of the climate on natives of the low country are somewhat modified; it being to them as nearly as much a foreign climate as India is to us. They are very subject to slight ephemeral fever and bowel complaint on their first ascent, particularly if care be not taken to prevent their exposing themselves to wet, and sleeping on the ground. They very readily become acclimatized however, and it appears to me that they become more muscular and more capable of enduring fatigue than even in their own country.

The general plan of treatment pursued may be described in a very few words. In the first instance, I have generally endeavoured to obviate the effects of the sudden transition and consequent congestion of the viscera, by mild aperients, diaphoretics, warm bath, &c.

The after treatment depends of course on the peculiar nature of the original disease. If an hepatic affection, a course of alterative mercurial medicines (Plummer's pill is my favorite prescription), nitric acid, a mercurial plaster on the side, and finally tonics of the simple description.

In dysentery, ipecacuanha in the form recommended by Mr. Twining, is our sheet-anchor—and has proved equally efficacious in simple diarrhœa; sulphate of zinc, sulphate of copper, and the usual tonics, have also been adopted with advantage: the former of these medicines, (assisted by tartar emetic in nauseating doses during the paroxysms,) I have found highly useful in cephalalgia. Fever is generally subdued by smart purgatives and diaphoretics during the fit, with Quinine in considerable doses during the intervals, particularly just before the access of the fit. I have now and then been obliged to have recourse to arsenic in the more obstinate forms of fever, and almost always with success. The enlargement of the spleen, consequent on intermittent fever, has generally yielded to the spleen mixture recommended by Mr. Twining*. Rheumatism I have generally found manageable by a steady course of Sarsaparilla, infused in lime-water†. Dyspepsia requires more management, and generally demands a variation of successive ant-acid and tonic remedies; one of the most useful of these I have found to be a light bitter infusion, such as infusion of Calumba or Cascarilla, with from three to seven grains of carbonate of potash in each dose.

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* Either from some defect in the packing, or some more abstruse cause, dependant on sudden change of temperature, vaccine matter contained in glasses or phials generally spoils in being conveyed to the hills. Fortunately, the facility of procuring a child with vaccine pustules from the neighbouring low country obviates this objection.

In female complaints, tartrite of potash and iron has proved a very useful assistant to the tonics in general use.

As a general principle, my object has always been to obviate symptoms as they arose, and to assist nature by the simplest means in her endeavours to restore the tone of the constitutional powers, leaving the rest to the climate, in the effects of which I have *never* been disappointed.

A few words on each of the more important Indian diseases will appropriately conclude this part of the subject.

Cholera has only once occurred as an Epidemic on the Hills; this was among the men composing the corps of pioneers at Coonoor, who had been previously much weakened by fatigue and exposure, and lost fourteen cases: only one case occurred at Ootacamund, and one at Kotagherry; and on a former occasion, when the Governor's camp was attacked at the foot of the hills, the disease was instantly checked on their ascending, no new cases occurring, and those previously attacked rapidly recovering.

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* Transactions of the Calcutta Medical and Physical Society, vol. iii. page 365.

† Sir B. Brodie's preparation.

Fever is unknown on the hills, except when contracted previously in the low country. In cases which have suffered from it below, it is of all other diseases probably that which derives the most immediate and decided benefit from the climate, at least if unconnected with permanent derangement of the liver. When complicated with affection of the spleen, as in the Seringapatam and Guzerat fevers, it proves more obstinate, but rarely intractable. Jungle fever, one of the *most dreaded and intractable of the* whole class, is in general so much modified by the climate, as to lose its formidable character, as a proof of which may be stated the fact that out of some 18 cases, which have come under my observation, we have lost only one patient[*]. Fortunately, the circumstance of this form of fever seldom or never declaring itself before a fixed and definite period (generally the eleventh or twelfth day) after exposure to the miasm, we are enabled to apply precautionary measures so as frequently to arrest the attack altogether, or at least weaken its force considerably. Among other striking examples of this fact, the following is not the least remarkable:—In 1831, a party of 27 European convalescents, under charge of Lieutenant Croft and Dr. Auchinleck, while on their march to join the depôt here, owing to some misapprehension of the Quarter Master General's instructions, passed a night in the middle of the jungle at the foot of the Ghât. The moment I ascertained this fact, I placed all the Europeans under a rigid system of surveillance, and they were each well *disciplined* and took considerable quantities of Quinine, with other ordinary precautionary measures. Lieutenant Croft, being subject habitually to fever, was subjected to a similar course of treatment, and all these escaped without a single untoward symptom; but Dr. Auchinleck, relying on the strength of his constitution, neglected the precautions recommended to him, and the consequence was that on the eleventh day he was attacked by the fever in its most marked and aggravated form, and only escaped by the adoption of the most active and decided treatment.

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[*] This was in every respect a most unfortunate instance, as being that of a gentlemen of distinguished talents, of the most amiable manners, and the most unwearied zeal. Circumstances having induced him to devote much of his time and talents to subjects connected with the improvement of the Neelgherries, his loss fell with peculiar weight on us.

I allude to the late Dr. A. T. Christie, who contracted the disease while passing through the Goodaloor jungle, on his way to Ootacamund: being naturally much predisposed to febrile derangement, the morbid action took such hold upon him, acting as a poison on the nervous system, that medicine proved completely inert, and he sank without a struggle on the sixth day after the first accession.

Dyspepsia or Indigestion, when unconnected with serious derangement of the liver, is another of the diseases which benefit in the most marked and decided degree by the climate. When we recollect that this Protean malady often baffles the highest order of talent and professional experience in Europe, it is no small proof of the efficacy of our climate to say, that dyspepsia is rendered even manageable by its influence.

I might refer to numberless instances of the rapidly beneficial effects of the climate on dyspeptic disorders: one of the most remarkable is that of my friend Mr. Smoult, who got completely rid of dyspepsia of some standing in less than two months.

Debility, in whatever degree, and particularly when occurring as the result of long residence in the low country, without being connected with decided disease, seldom or never fails to yield to the influence of our bracing air, aided by proper diet, exercise, and regimen. The only exception to this is the case of those who by such residence have become Indianized in their habits and feelings ; to them the cold and wet are serious and insuperable obstacles, and they suffer so much discomfort in this way as nearly to neutralize any benefit their health may derive.

Habitual constipation, in the low country a very obstinate complaint, yields at once on the hills. The additional quantity of fluid thrown into the bowels assists this effect at first, and the restored tone of the stomach, bowels, and digestive powers in general completes the cure.

Local and cutaneous diseases of every description, sores, ulcers, affections of the joints, fractures, injuries of the head, and all other affections of this class, yield to appropriate remedies with at least as great facility as under the most favorable circumstances in Europe ; convalescence being in all of them incredibly rapid and perfect.

Pulmonary disease, being of comparatively rare occurrence in India generally, is not often the subject of treatment here ; where it has occurred in its earlier stages (the only circumstances under which it is manageable in any part of the world), it has presented no difficulty whatever

The host of diseases peculiar to females acknowledge the influence of our climate in a remarkable degree; they are often extremely obstinate, and are very generally rendered more so by the impatience of restraint and unpardonable imprudence of the sufferers themselves, but nevertheless almost always yield to time and the gradual effects of the climate.

Diarrhœa, though requiring much care on the part of the medical attendant, and much self-denial on the part of the patient, from the liability to relapses consequent upon atmospherical changes, and slight errors in diet, has not in a single instance resisted the effects of judicious treatment; it is however a most obstinate disease, and in common with the next to be noticed requires a long freedom from attacks; in other words, a prolonged residence on the hills, to secure the sufferer from relapses, on returning to the low country.

Dysentery, whether acute or chronic, is so seldom met with, unconnected with derangement of the liver, as to fall more properly under the next head. Under whatever form it occurs, it is justly considered as one of the most formidable and fatal of Indian diseases, occasioning a greater loss of life among the lower ranks of Europeans in particular, than any other complaint—Cholera not excepted. Upon the whole, our practice in the less aggravated forms of the disease has been tolerably satisfactory, but it always proves extremely obstinate, from the tendency to relapse from comparatively trifling causes, such as slight atmospherical changes, errors in diet, exposure, &c. and it is rarely overcome without more or less injury to the constitution. It is in this and the next class of disease (hepatic), that I conceive the precautionary measure of a sea-voyage most urgently called for: with this advantage I apprehend that the results would be completely reversed; but without it, I am disposed to think that none but the mildest forms of the disease should be transferred to the Neelgherries, and that in all of them the patient should be acclimatized by a previous residence at Dimhutty or Coonoor, until the disease is fairly subdued, and nothing remains to be done, but to invigorate the constitution and restore the powers of digestion and assimilation by a transference to the bracing climate of Ootacamund.

The same observations apply, but with still greater force, to the numerous and important class of "hepatic diseases." The liability to congestion from the sudden change of temperature, the mischief arising from the susceptibility of the skin (between which and the liver there exists the most intimate sympathy), to atmospherical vicissitudes, and the inability to bear exposure to the sun, all operate unfavorably at first, even on the mildest cases of liver complaint. In many of these, by the adoption of due precautions, and by sending the invalid to spend the first few months in the milder climates of Dimhutty or Coonoor, we have been enabled to neutralize these obstacles, and ultimately to restore them to health. But as a general principle, it must be conceded, that the climate of the hills is not suited to hepatic disease, *when of long standing, if of considerable severity, or if complicated with affections of the bowels,* unless the disease has been completely subdued by a previous sea-voyage. When the affection amounts to organic disease (leaving little hope of amendment from *any* climate), it is more likely to have the fatal termination accelerated than retarded by a residence here; and when a scrofulous taint exists in the constitution, it is difficult to prevent its running into abscess.

Rheumatism, as a consequence of the abuse of mercury in the low country, is not uncommon. Though an obstinate affection, it always yields to general tonic remedies, (such as the infusion of Sarsaparilla above-mentioned,) aided by the bracing effects of the climate.

Gout is equally manageable. The *cure* of this singular disease is perhaps in every instance impossible; when the constitution has the arthritic tendency, all that can be expected is, to reduce the number of fits, moderate their violence, and prevent their injuring the general health, all of which with but little assistance from medicine, is perfectly effected by the climate.

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SECTION 4.

CLASSIFICATION OF DISEASES.

I propose to divide this subject into three heads:

1ST CLASS.

1. Diseases in which I conceive the patient may with safety and advantage be transferred at once to the hill climate, including

those which would be benefited by a previous residence at Kotagherry, Dimhutty, and Coonoor.

1. Incipient disease of every description.
2. Fever, if unaccompanied with severe affection of the viscera.
3. Diarrhœa.
4. General debility, if not dependant on organic disease, or great functional derangement.
5. All local affections of whatever description.
6. The milder forms of chronic dysentery ; acute dysentery can seldom, I apprehend, be a proper subject of treatment in this climate.
7. The milder forms of hepatic disease.
8. Almost all female complaints, properly so called.
9. Muscular rheumatism.
10. Mercurial rheumatism, or periostitis.
11. Incipient pulmonary disease.
12. Dyspepsia and its concomitants.
13. Neuralgia (pains depending on an affection of the nerves).

2ND CLASS.

Diseases which are likely to benefit by a residence on the hills provided the patient has it in his power to premise a sea-voyage, (or, in the milder cases, a residence of some months on the coast,) so as to remove, or at least entirely check, the complaint. The duration or nature of the voyage must of course depend on the nature of the complaint, and other circumstances, to be determined by the judgment of the medical practitioner advising the change. To persons coming down from Bengal, or the more distant parts of the Bombay presidency, the short voyage along the coast will always be of service, often all that is necessary. In other and more serious cases, it must be prolonged for two or three months. Still the advantage of coming to the hills, instead of the long and expensive voyage *to* and *from* the Cape or Europe, the circumstance of being within reach of one's own office, or business, of whatever description, and many others, are so evident as to require no discussion.

1. Hepatic disease, not amounting to organic affection.
2. Dysentery of the severer descriptions, with the same qualifications.

3. Severe mercurial rheumatism, if attended with enlargement of the bones.

4. Chronic enlargement of the viscera, (or Parabysma, as it is termed technically.)

5. Debility, the consequence of long residence in the country, and complicated with functional derangement of the liver, or any other important organ. The sea-voyage in this and the first two divisions should be of considerable duration.

3RD CLASS.

In the first class, or diseases not likely to benefit by this climate, under any circumstances—I would include,

1. Hepatic disease, if organic or complicated with a scrofulous taint on the constitution ; at least if the latter has declared itself.

2. Dysentery under the same circumstances.

3. Confirmed pulmonary diseases.

4. The atrophy of advanced years, consequent upon long residence in the country and Indianized habits. To such unhappy subjects, after almost any degree of preparation, cold acts as a complete *extinguisher*, and the only resource left for them is a prolonged sea-voyage in the warmer latitudes.

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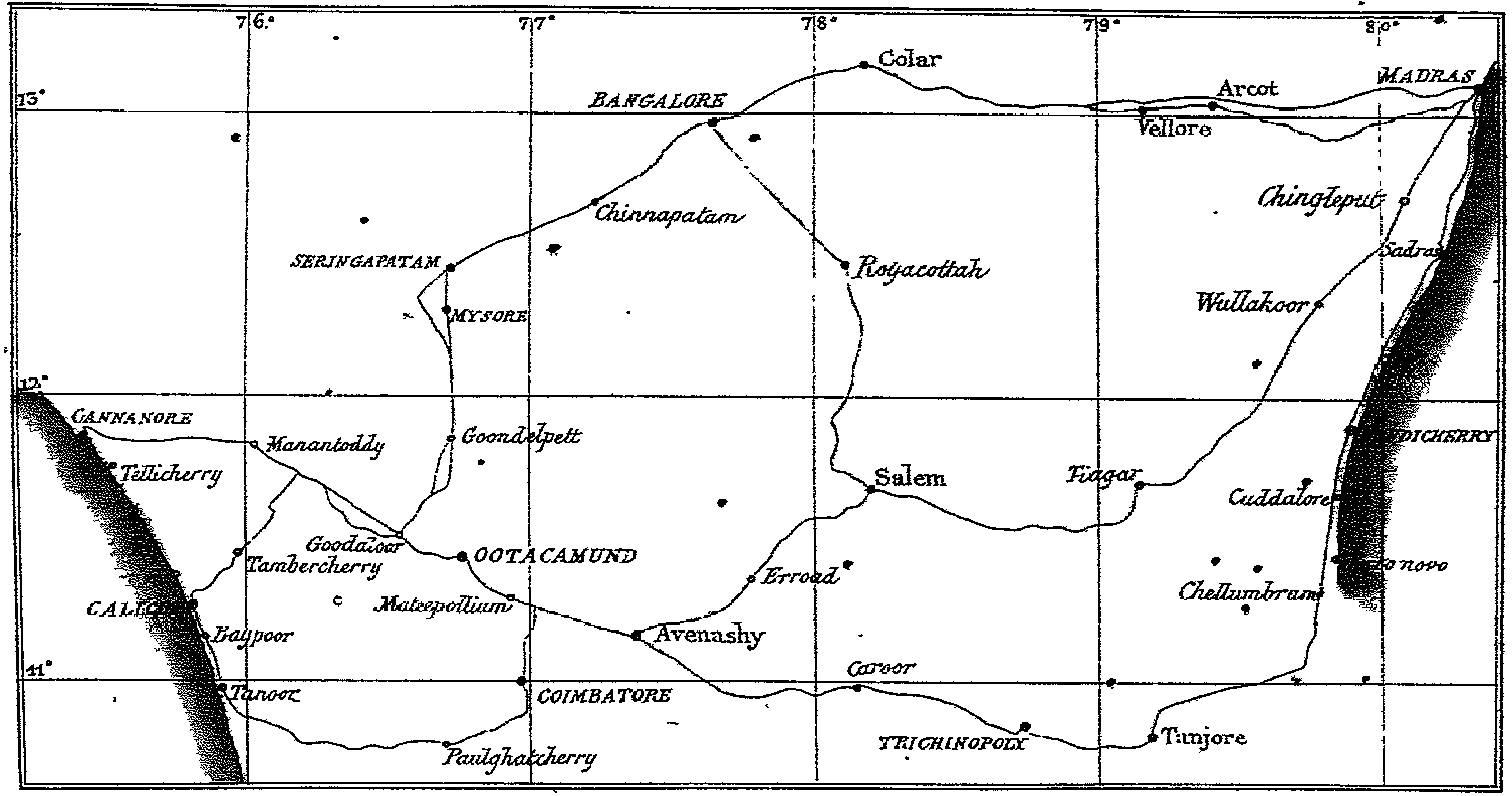

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Pl. I.

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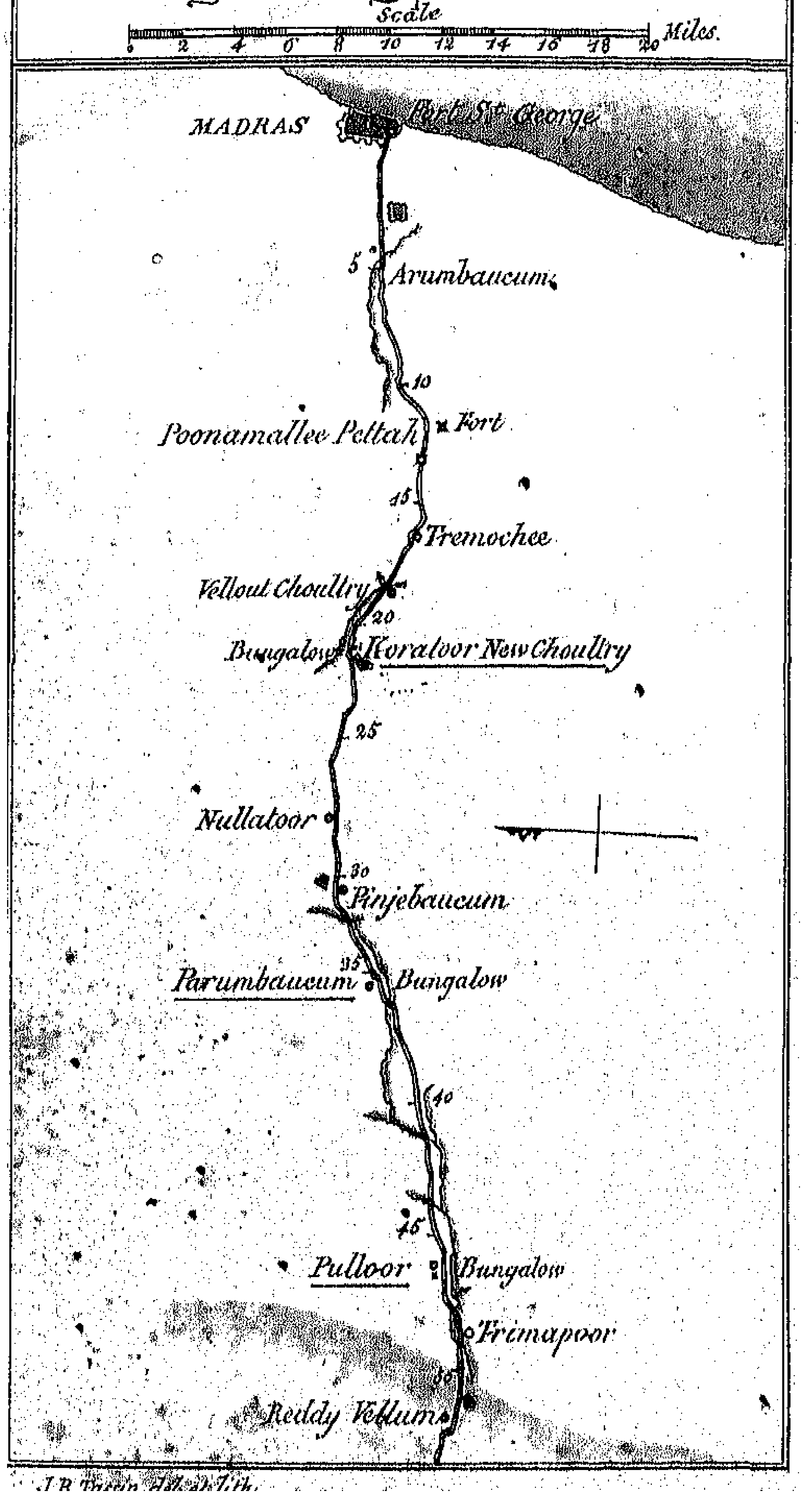
via Bangalore Seringapatam *and* Goodaloor



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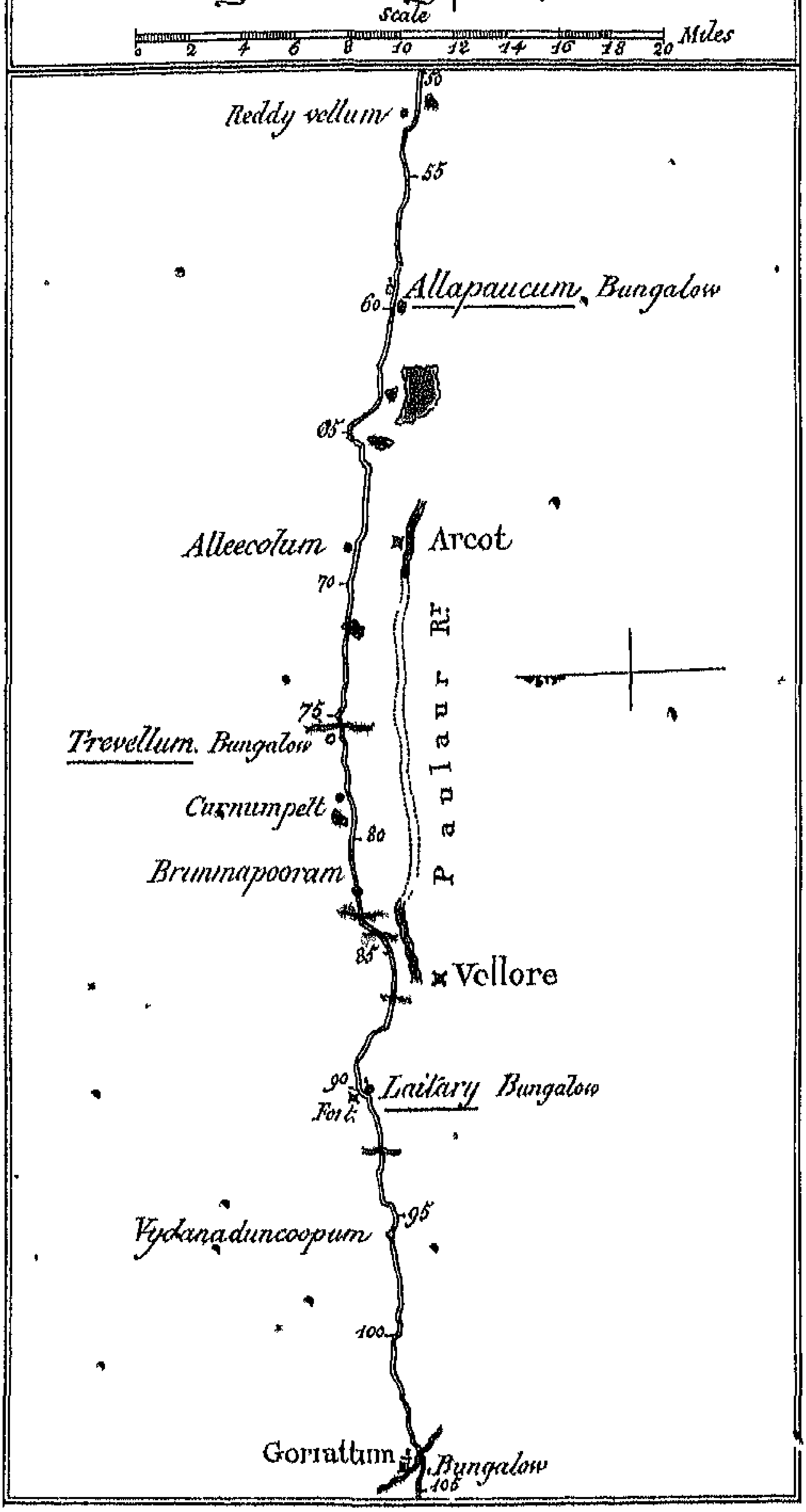

Pl. III.

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via Bangalore, Seringapatam, *and* Goodaloor

Scale
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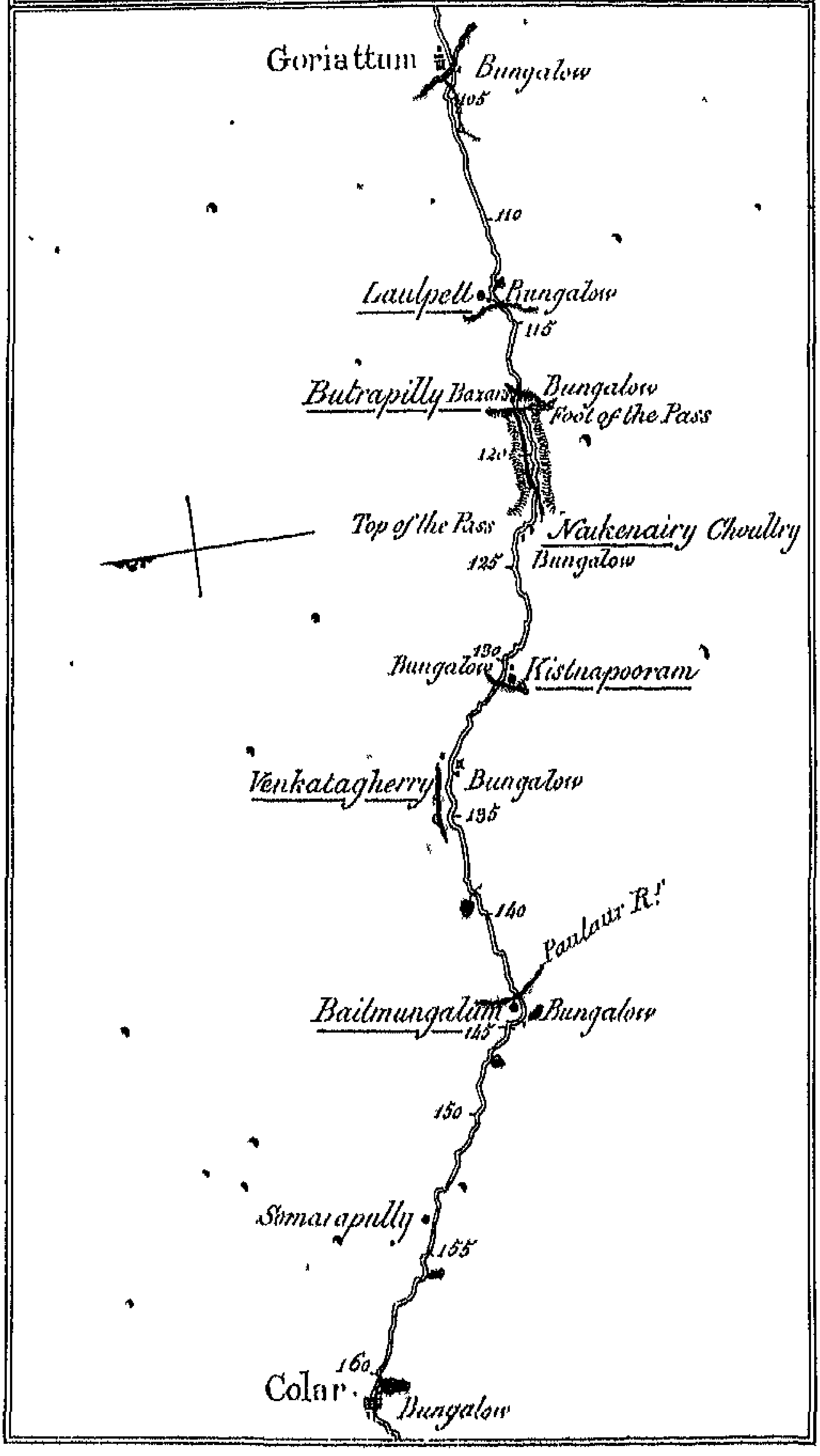

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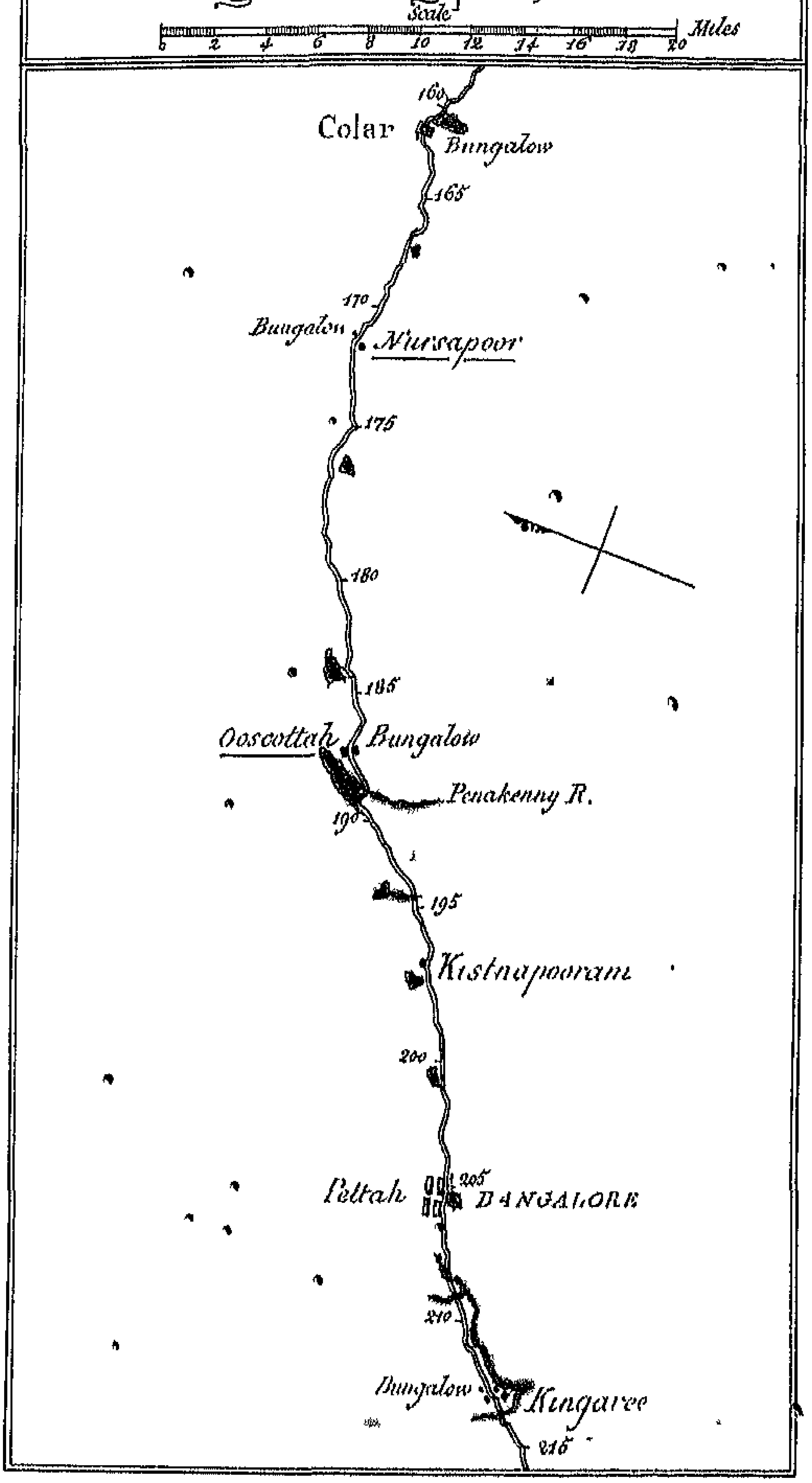

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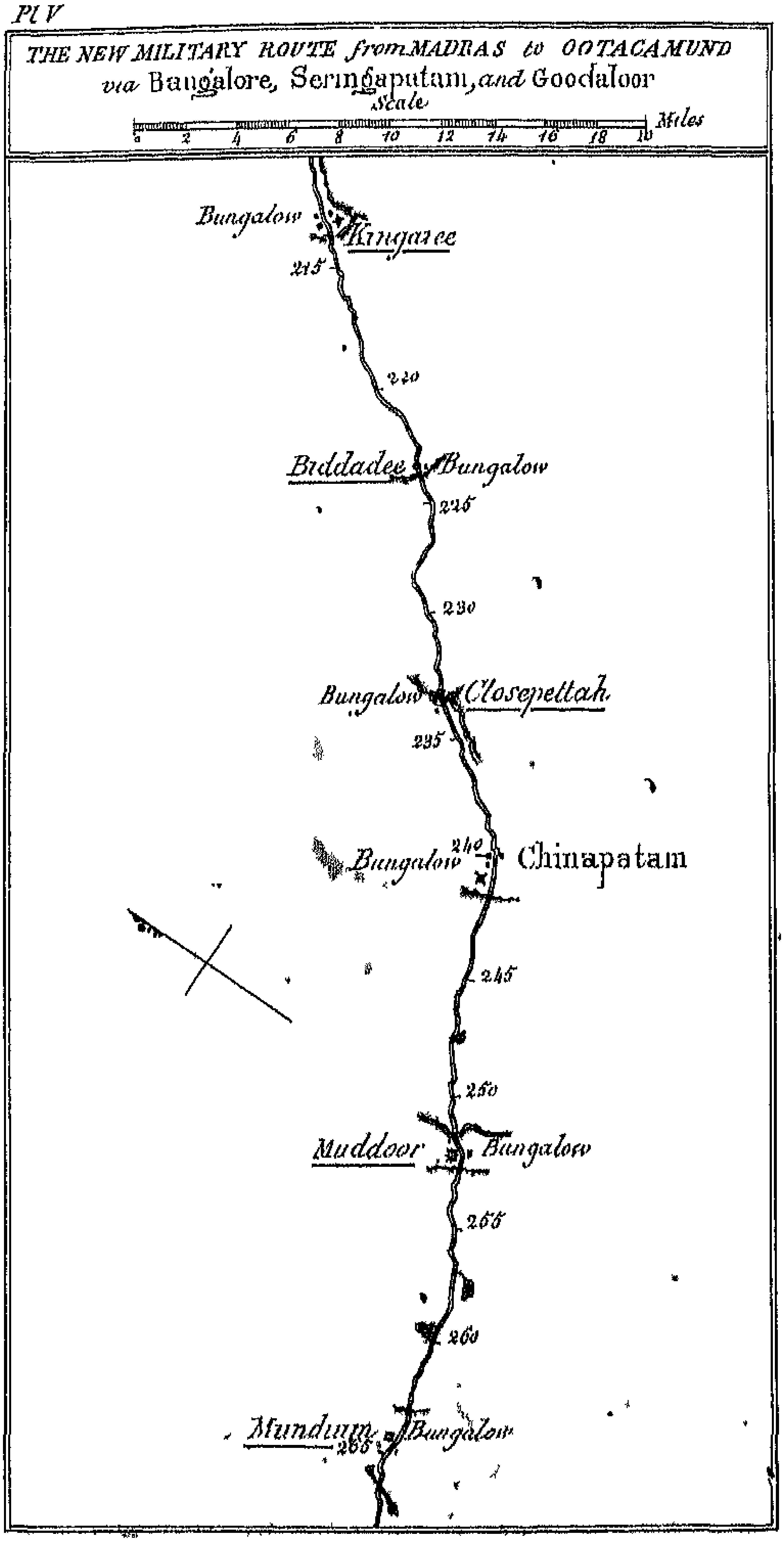

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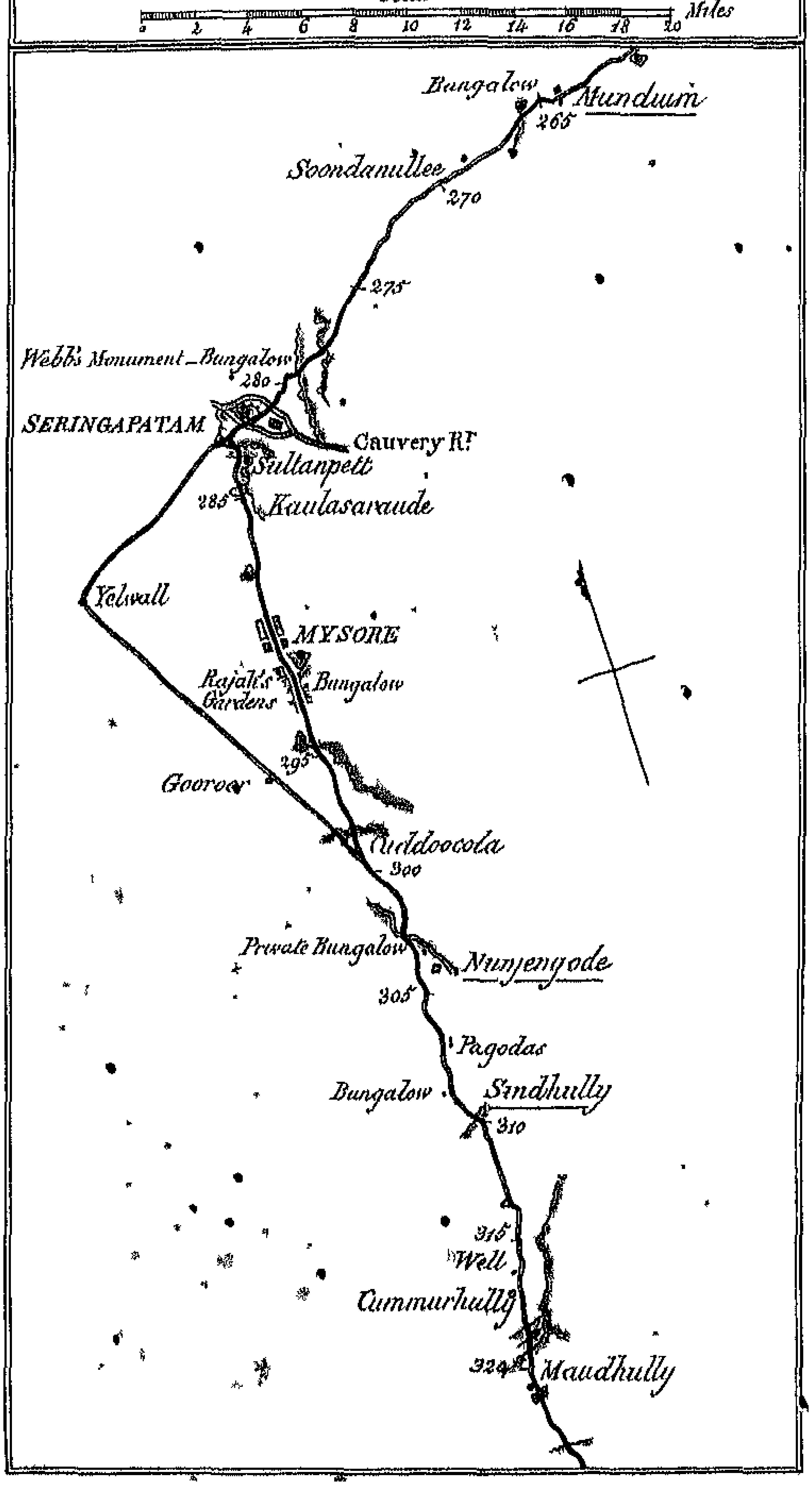

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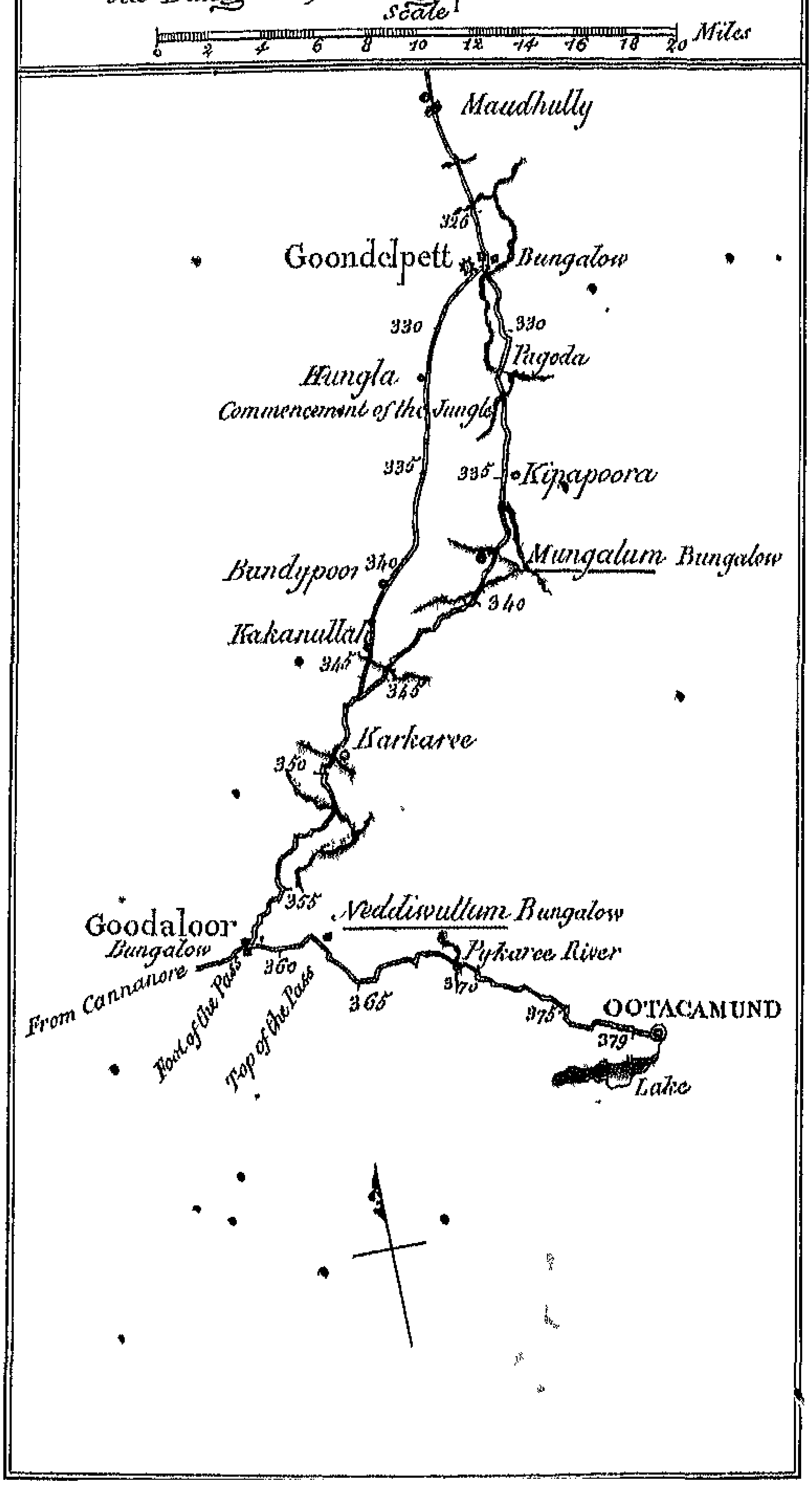

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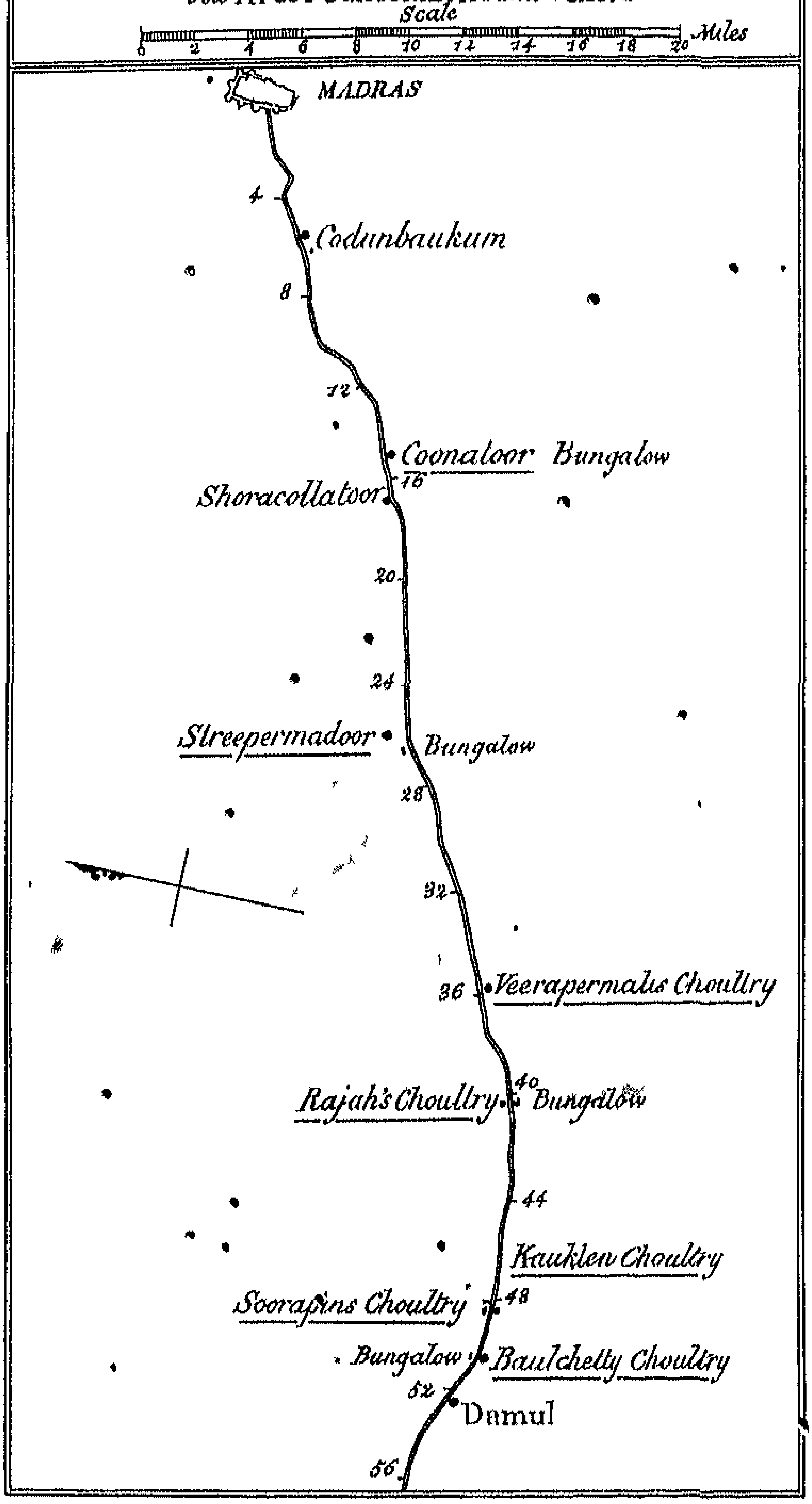

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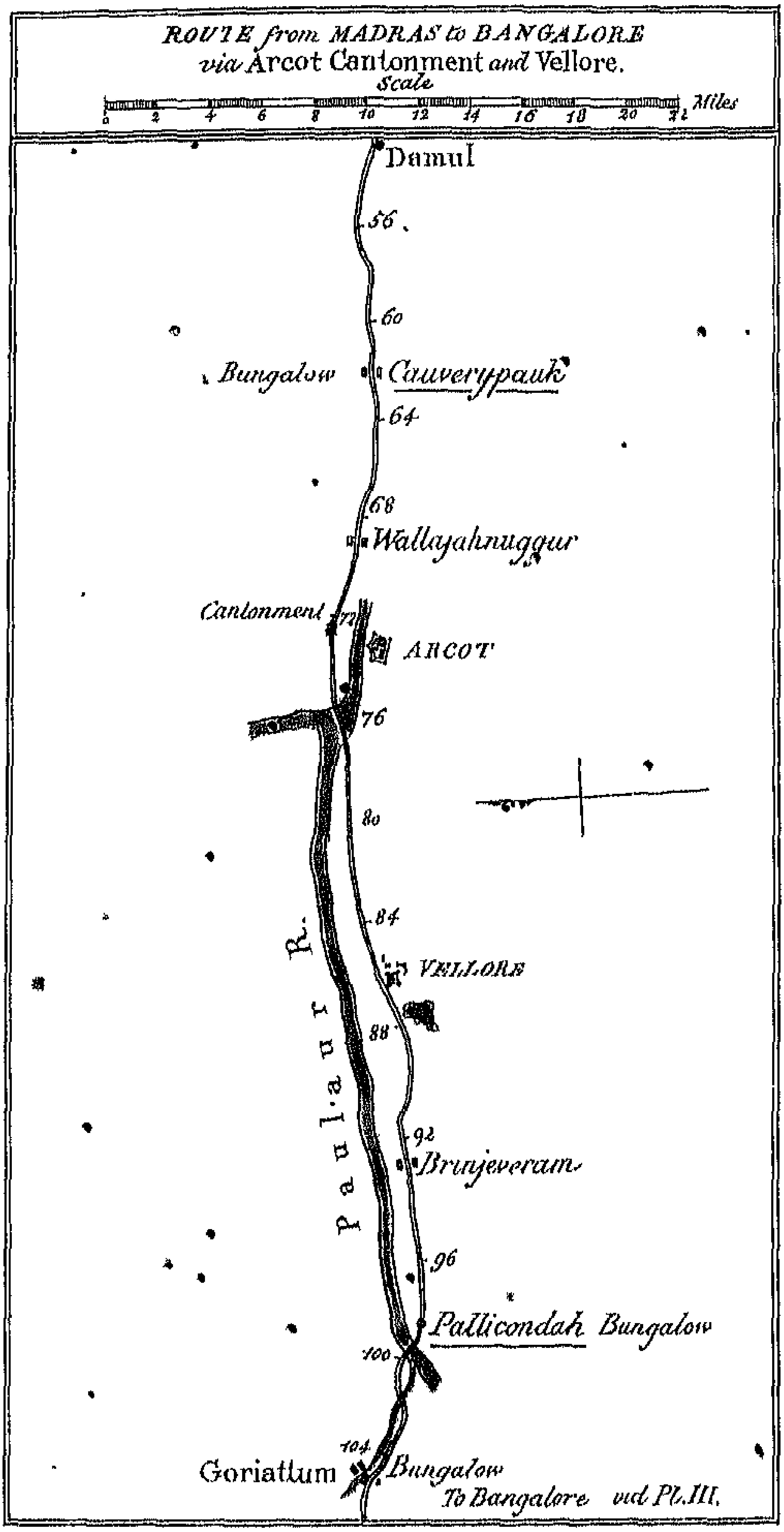
Pl IX



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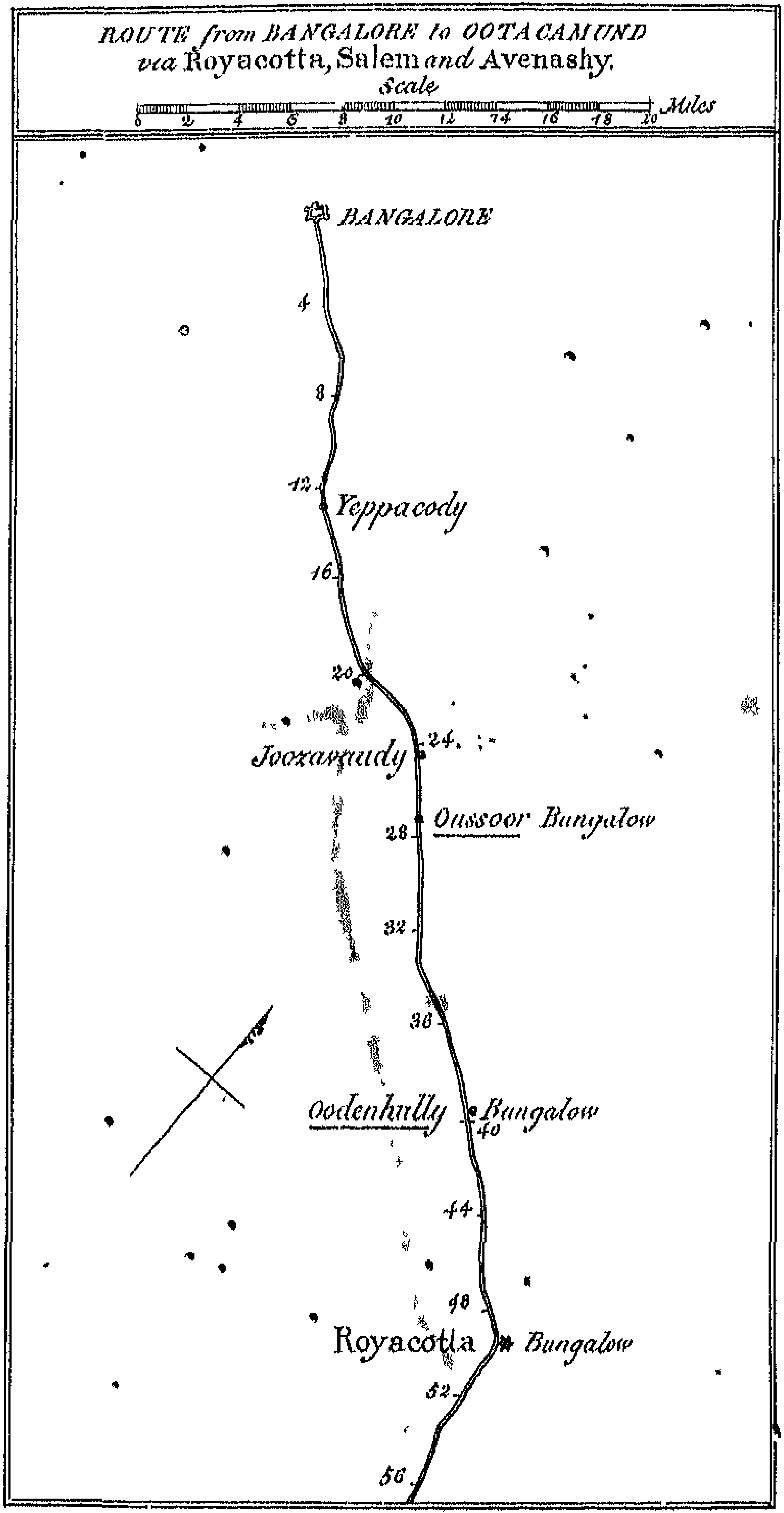

ROUTE *from* BANGALORE *to* OOTACAMUND
via Royacotta, Salem *and* Avenashy.

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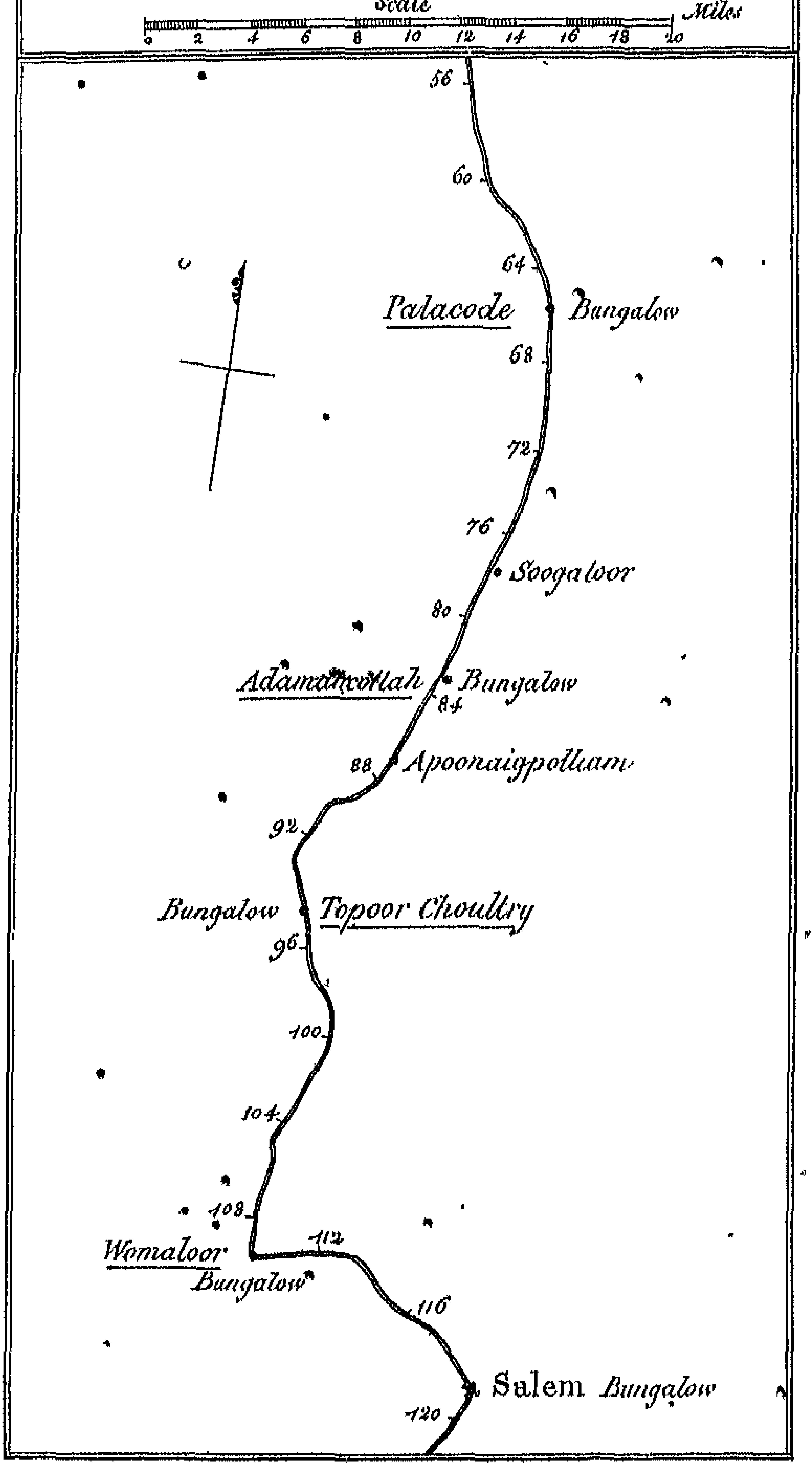
Pl XI

ROUTE from BANGALORE to OOTACAMUND via Royacotta, Salem and Avenashy



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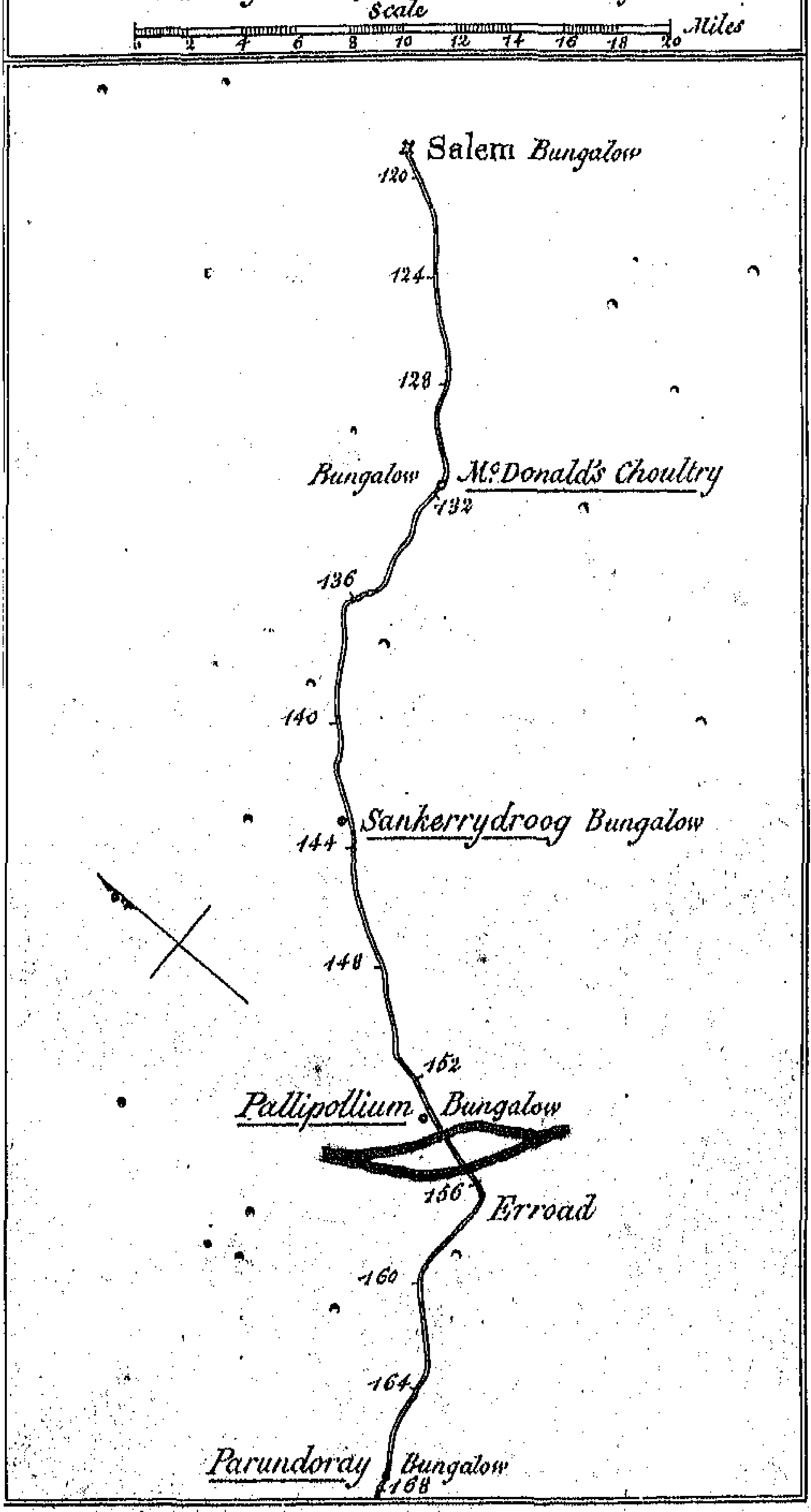

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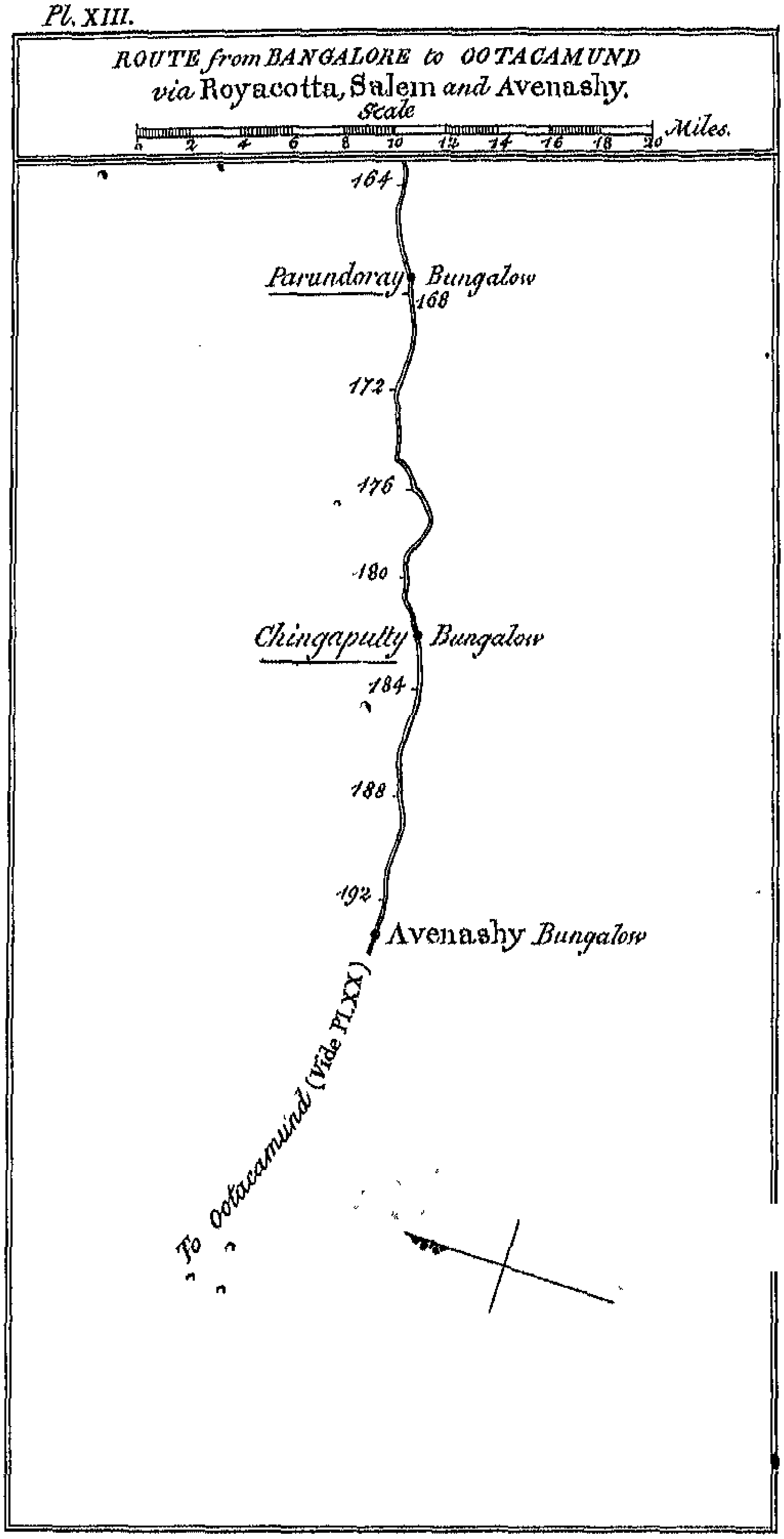

ROUTE *from* BANGALORE *to* OOTACAMUND
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Pl XIV.

ROUTE *from* MADRAS *to* OOTACAMUND
via Sadras, Pondicherry, Tanjore, Trichunopoly *and* Avenashy

Scale

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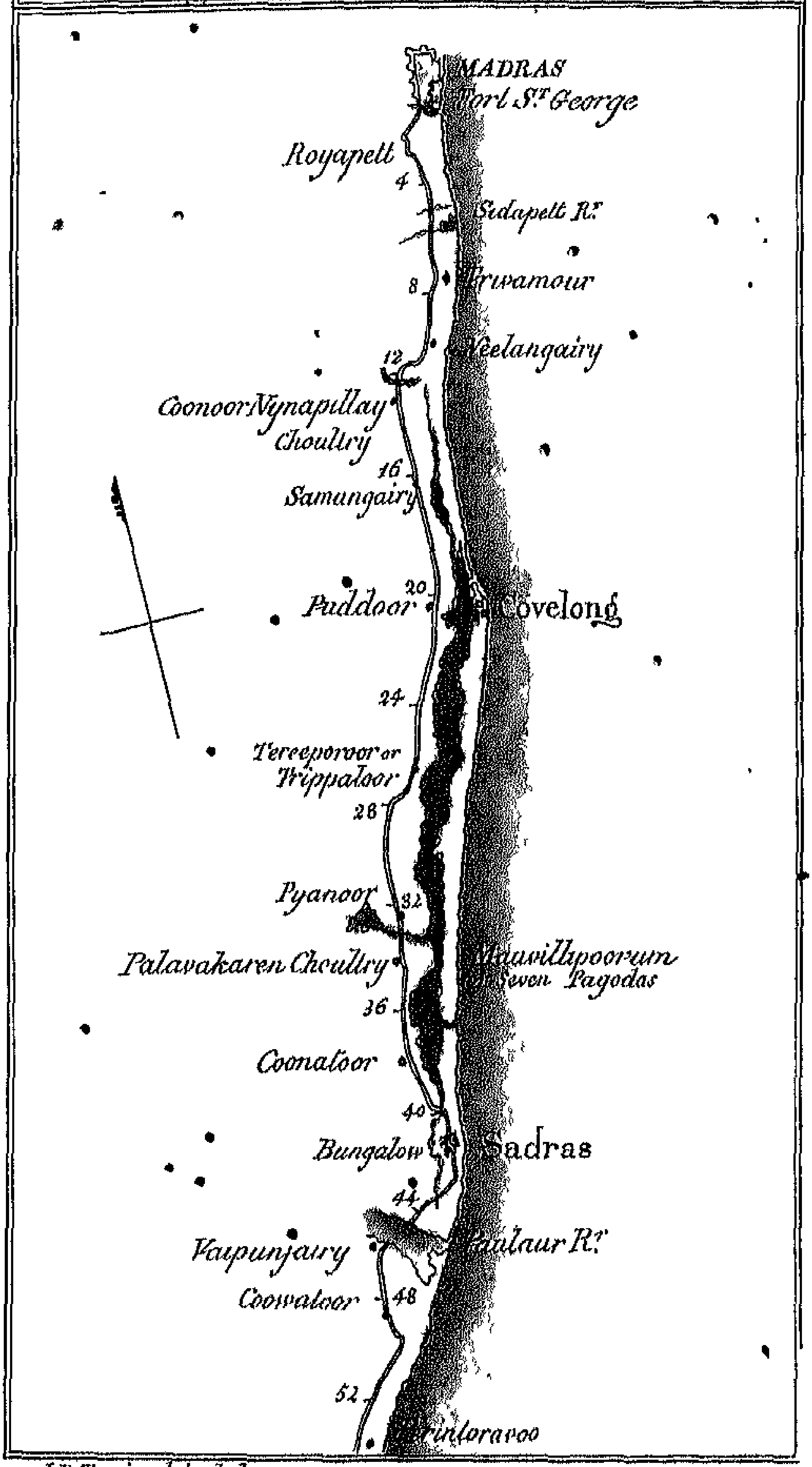

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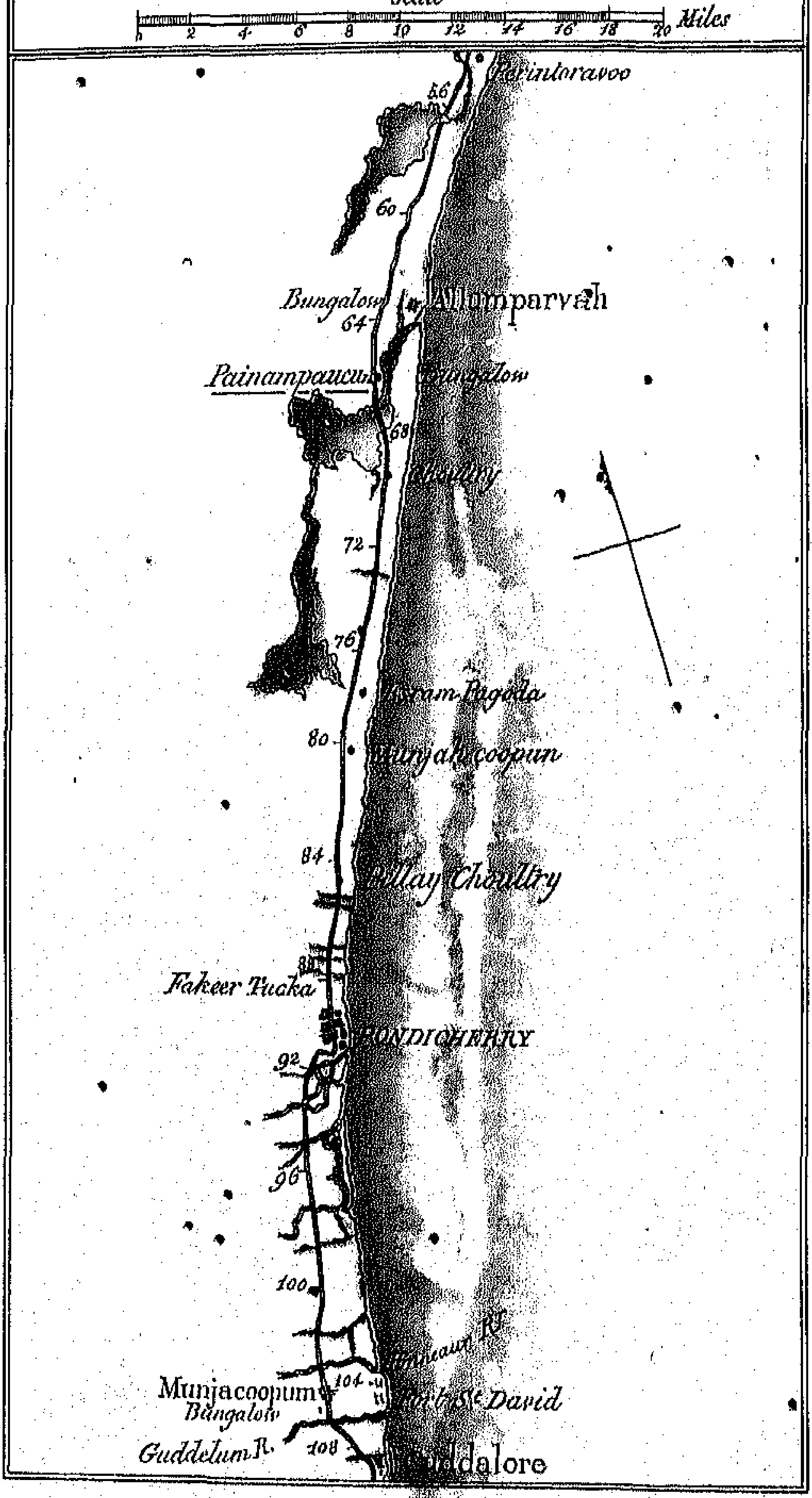

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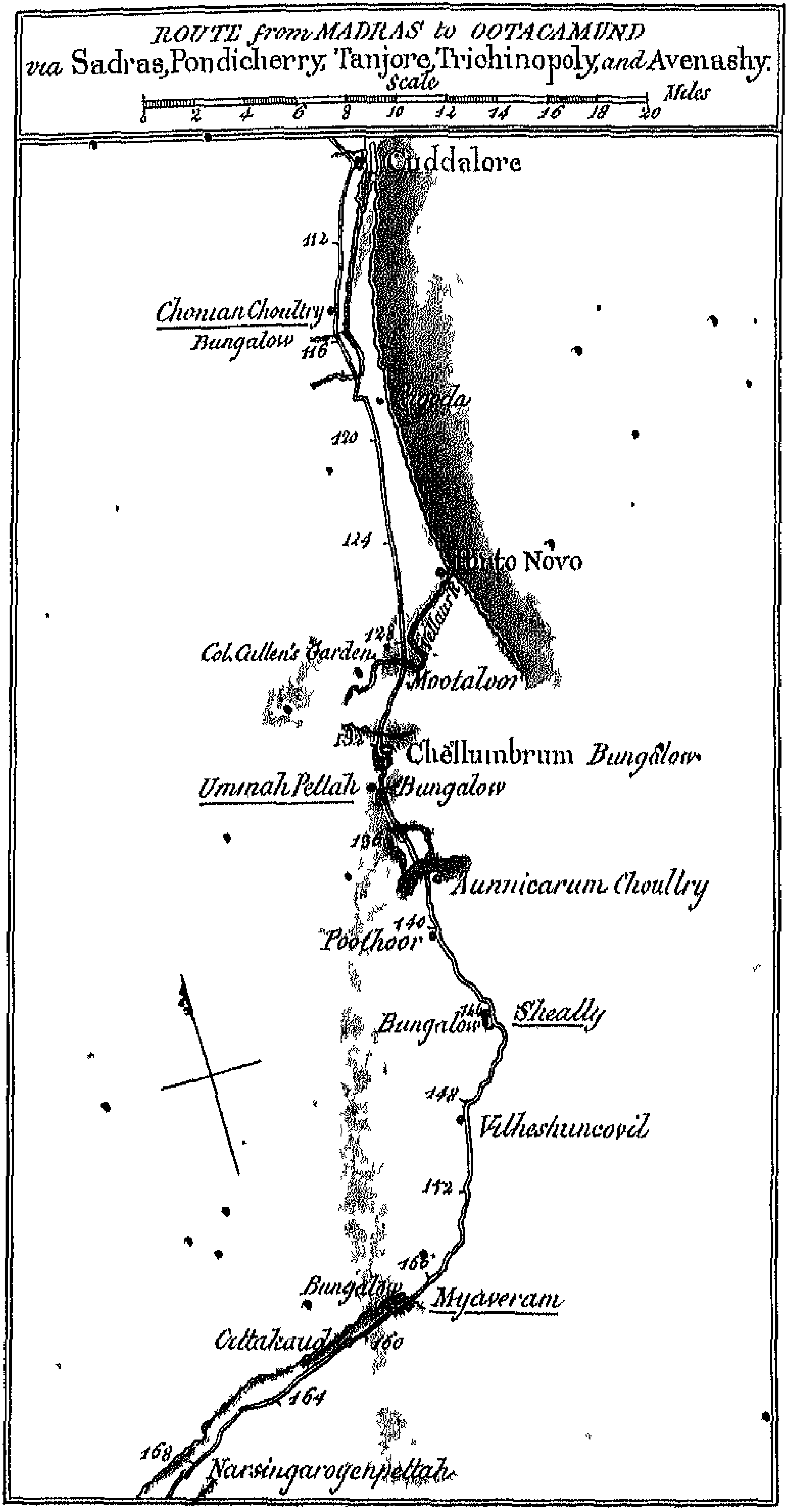

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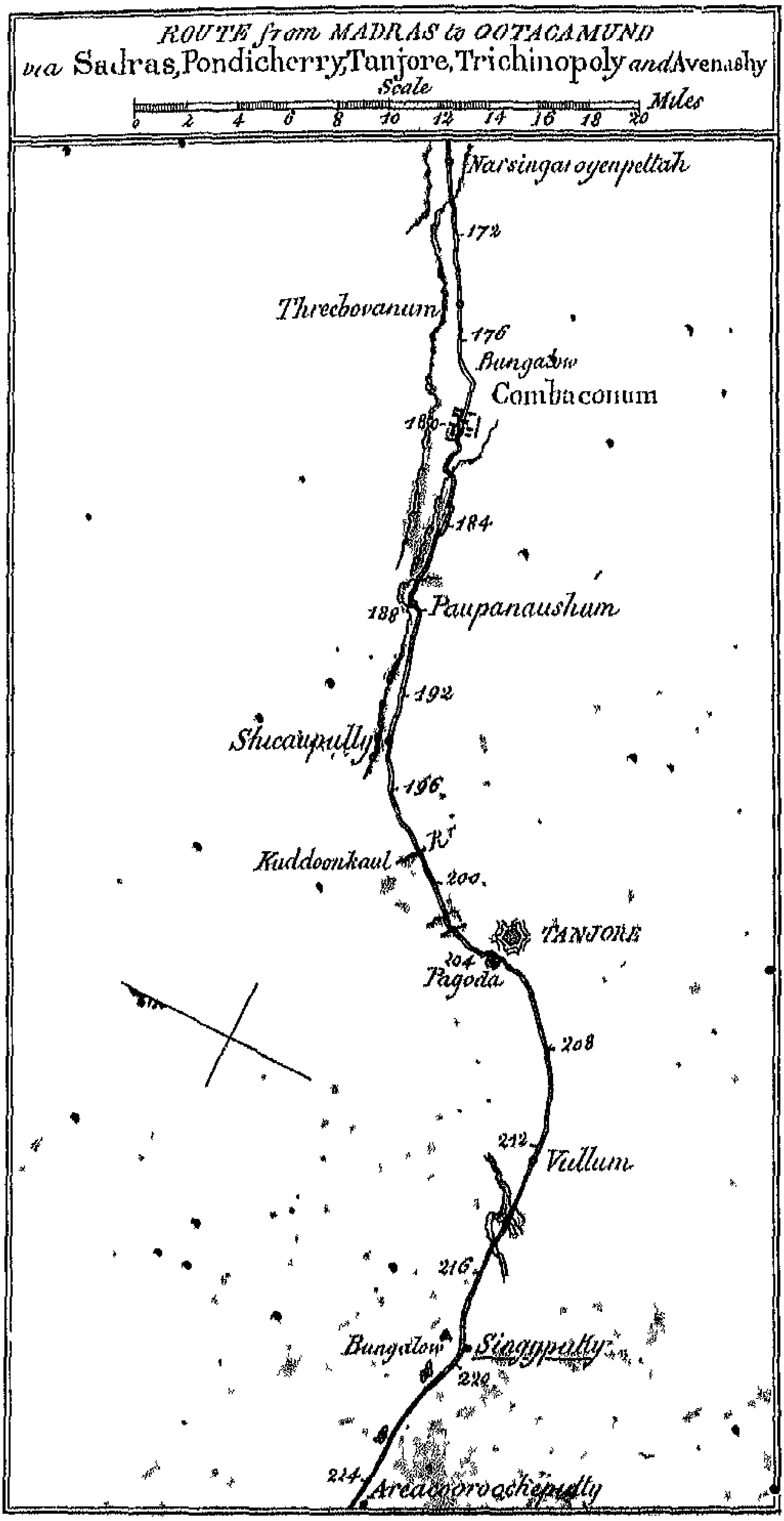

ROUTE from MADRAS to OOTACAMUND
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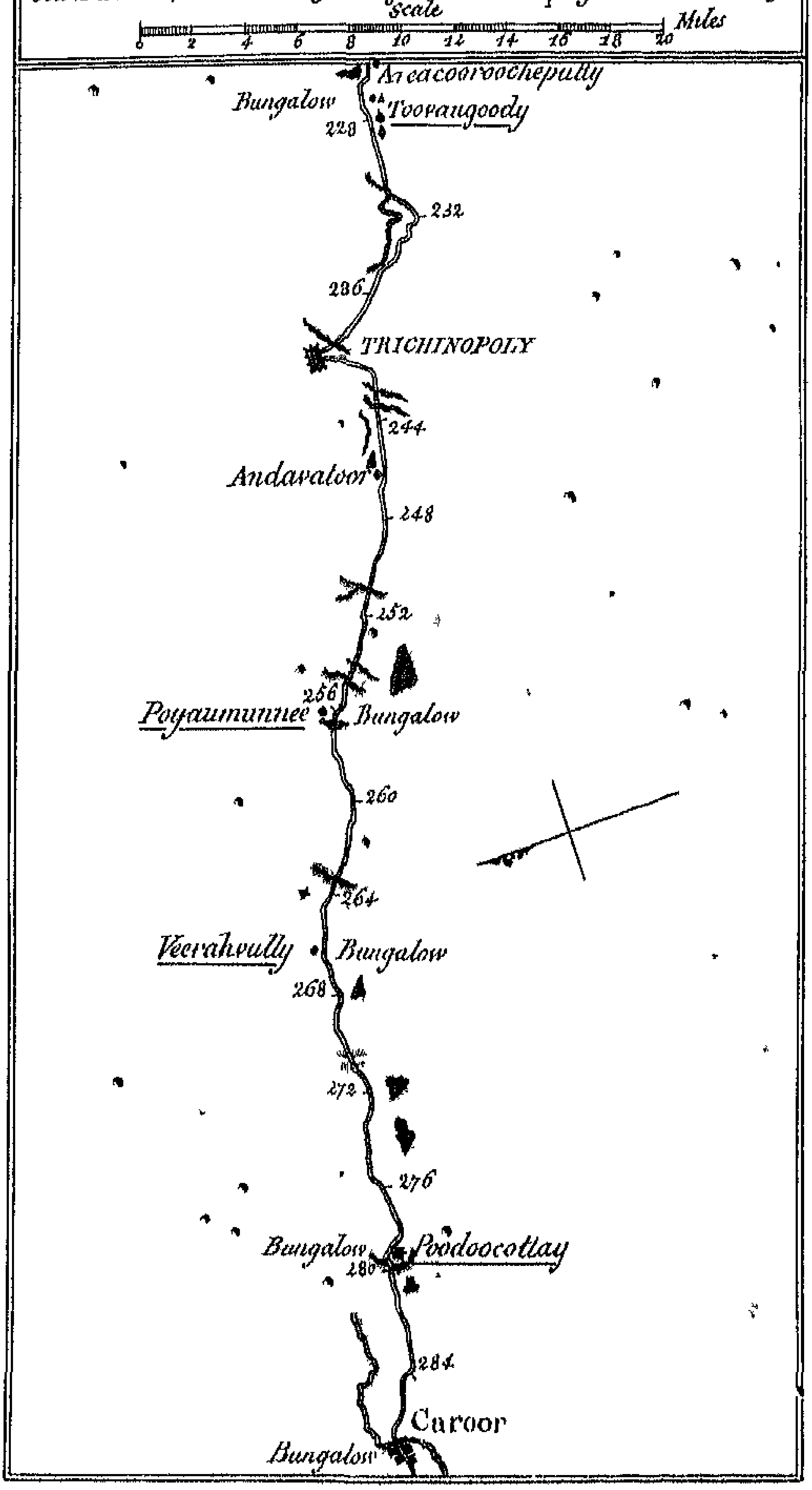

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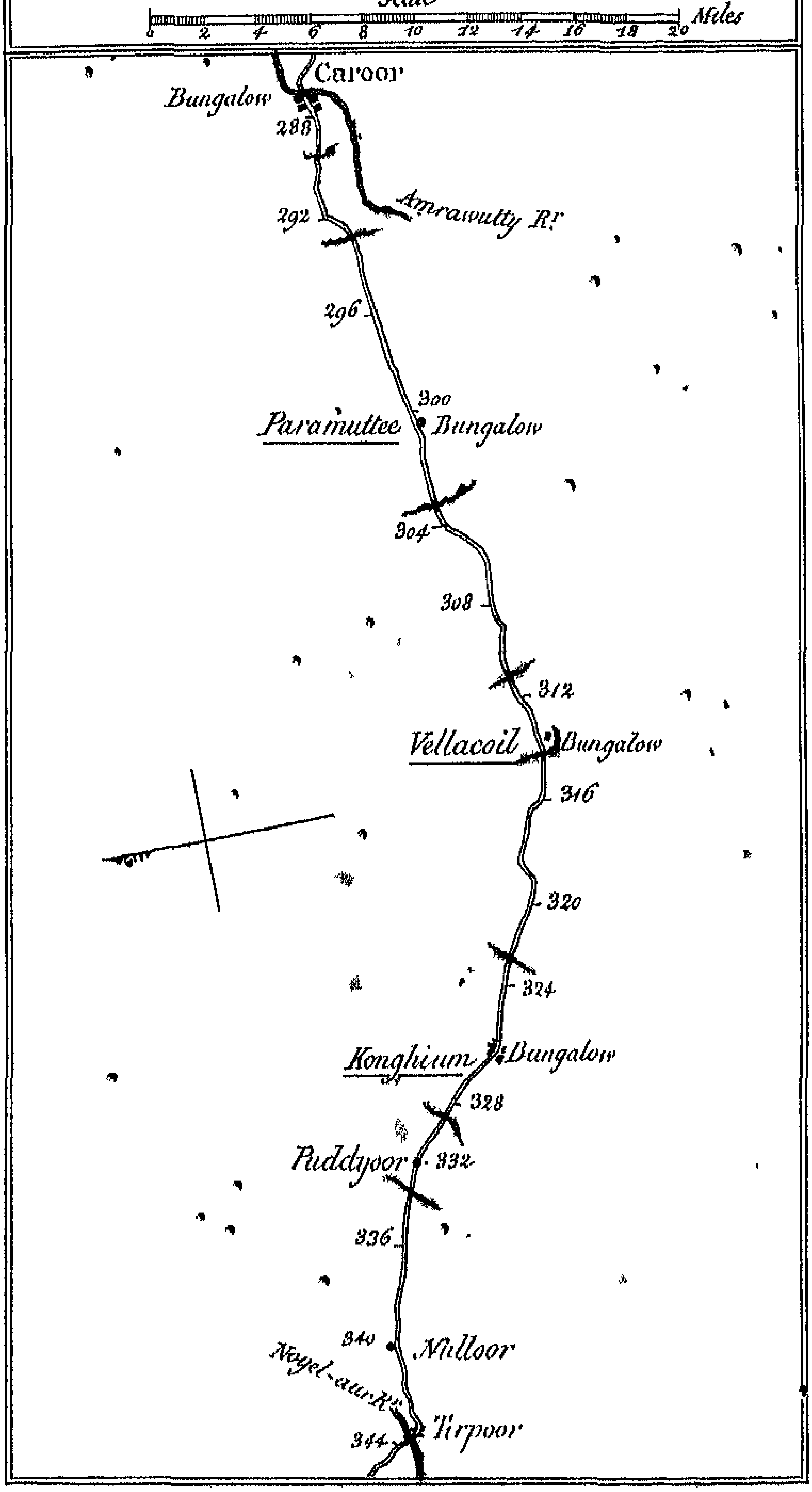

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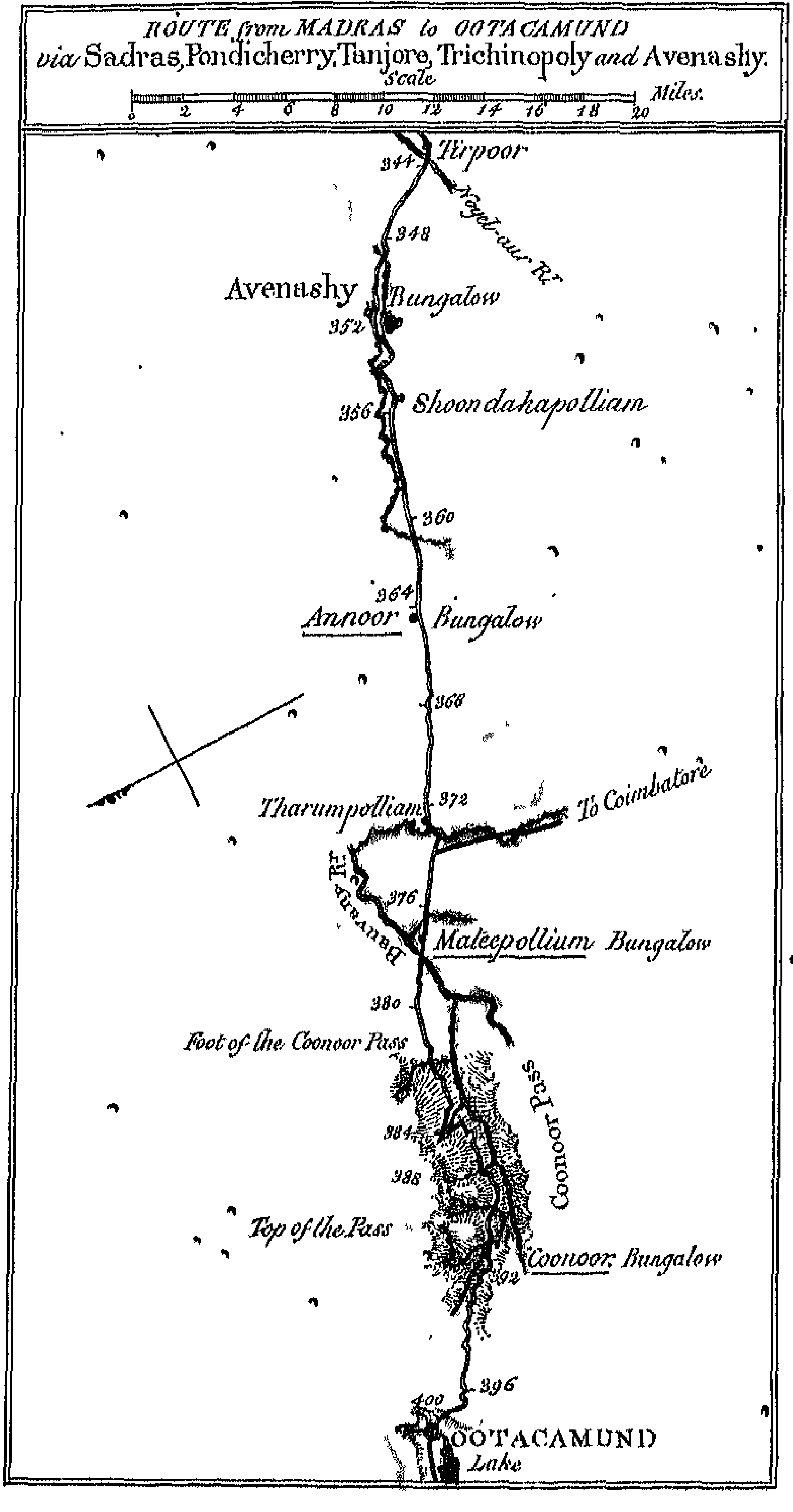

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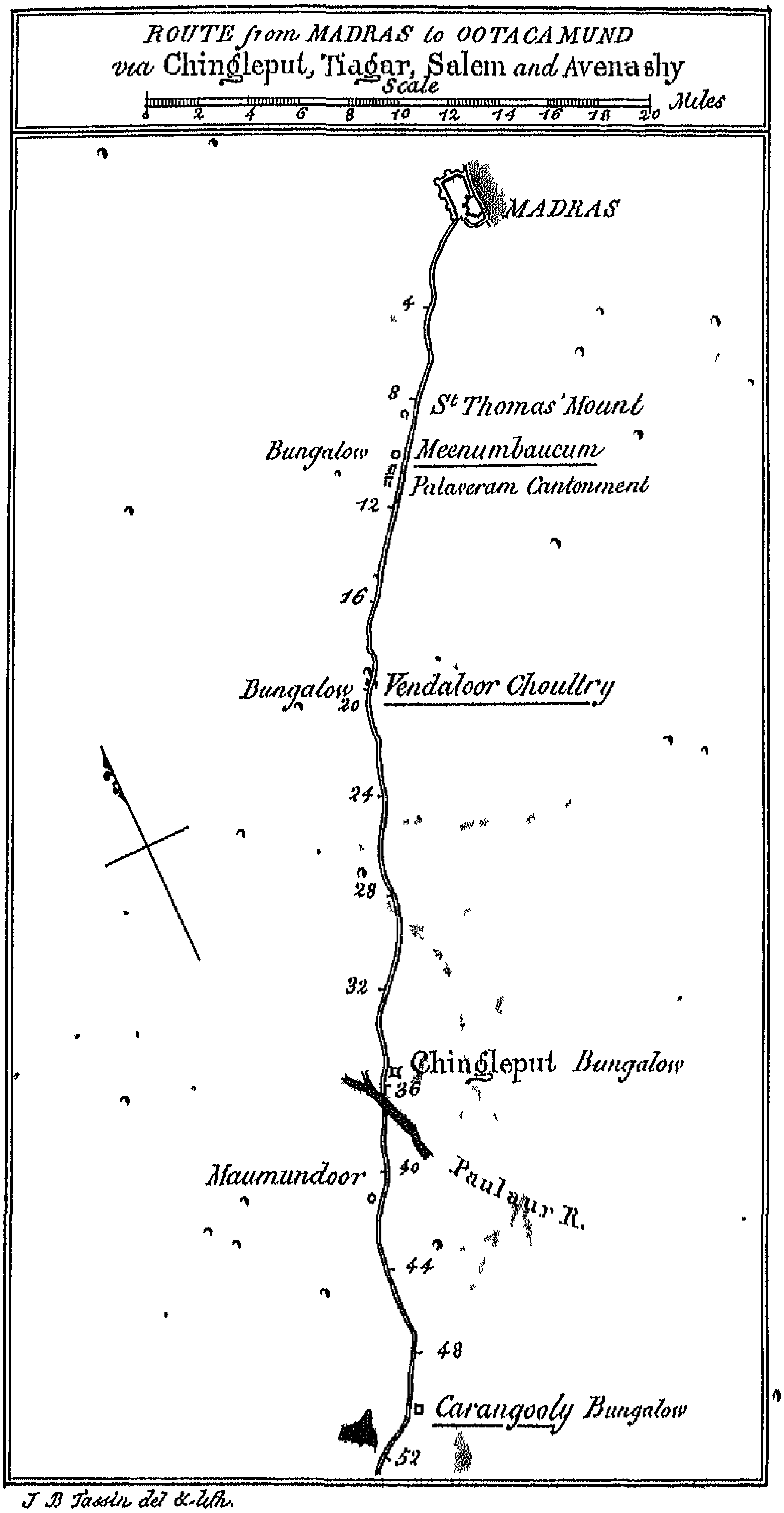
Pl XXI



ROUTE from MADRAS to OOTACAMUND
via Chingleput, Tiagar, Salem and Avenashy

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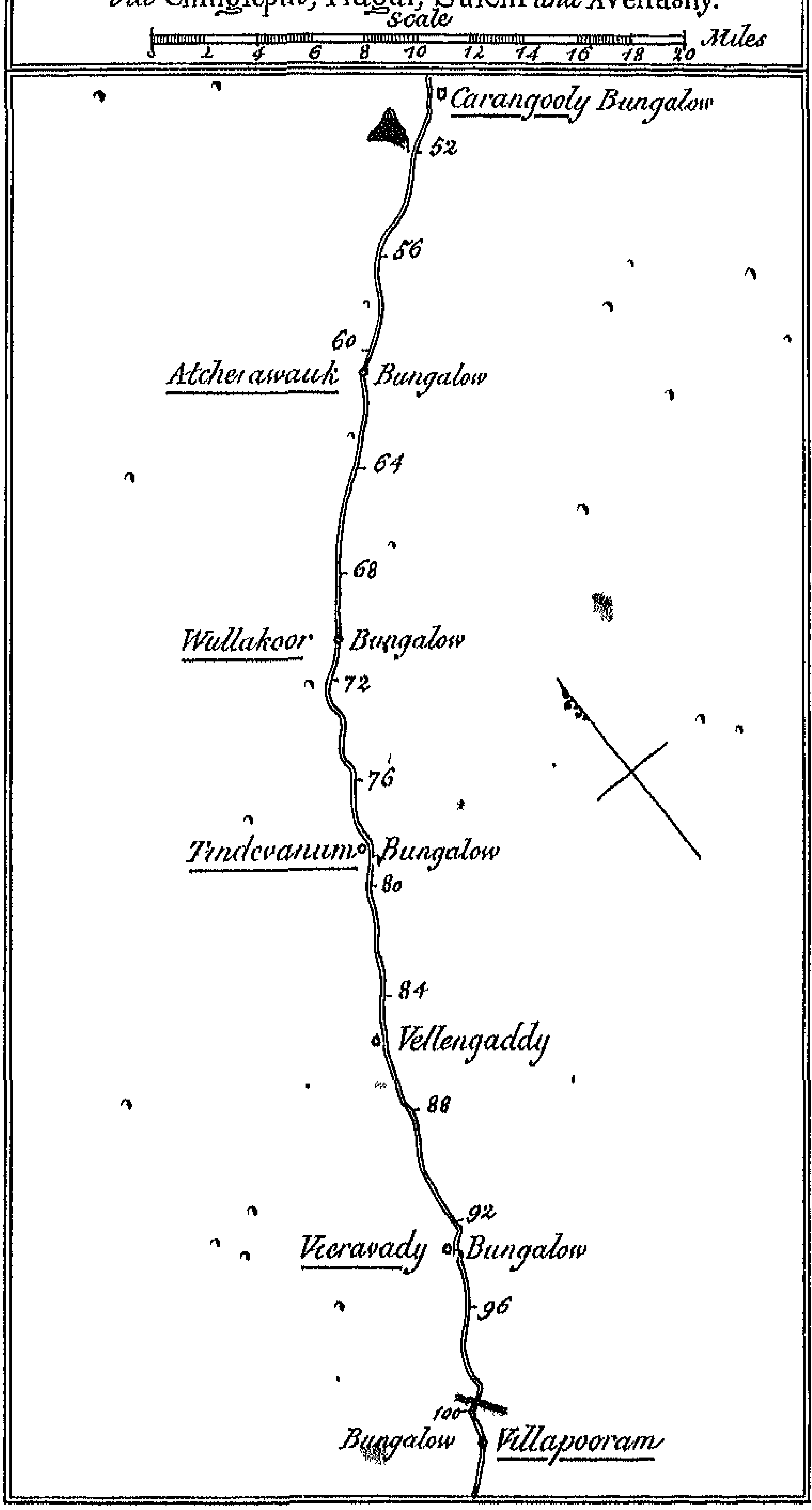
Pl. XXII.

ROUTE *from* MADRAS *to* OOTACAMUND
via Chingleput, Tiagar, Salem *and* Avenashy.



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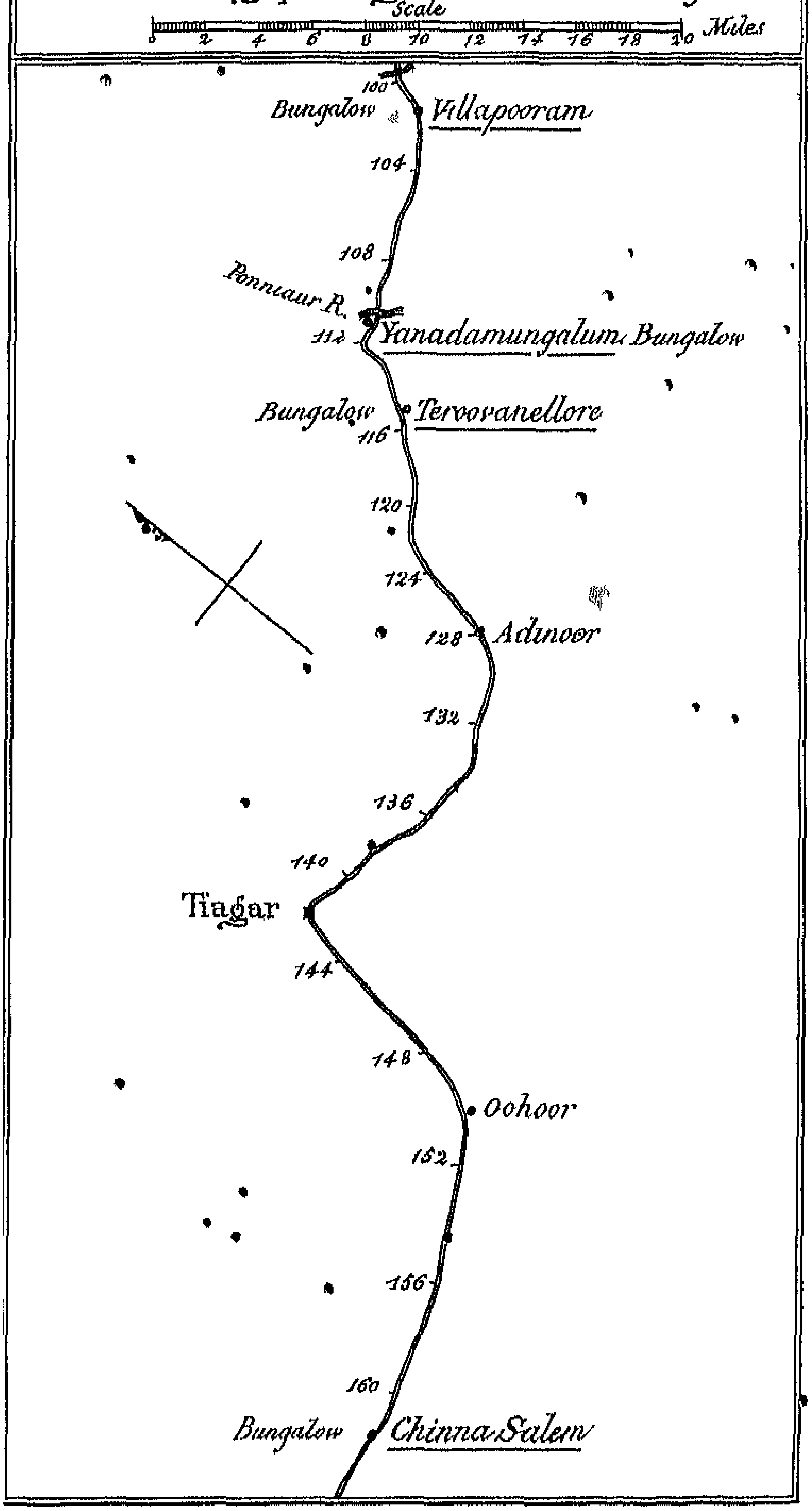

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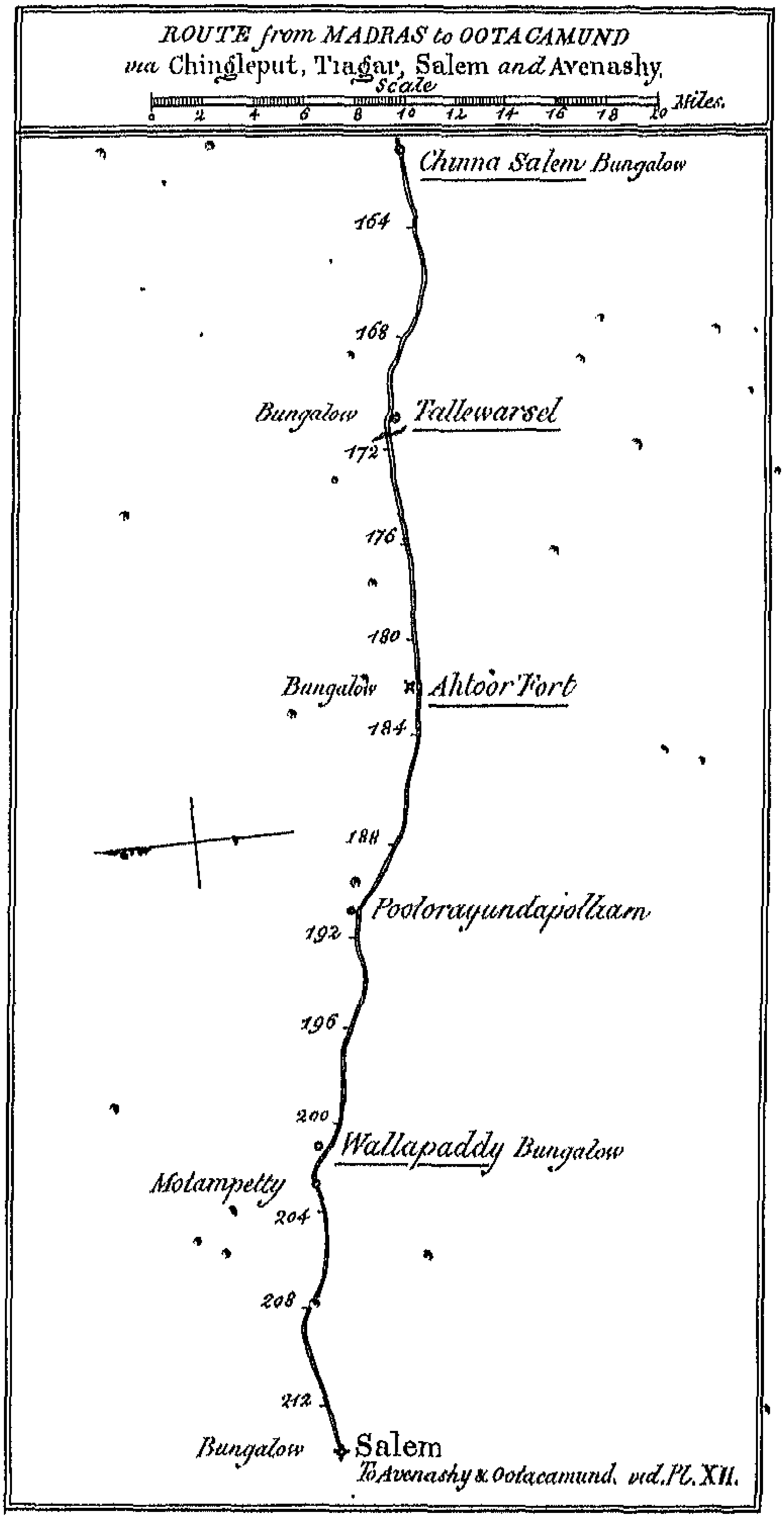
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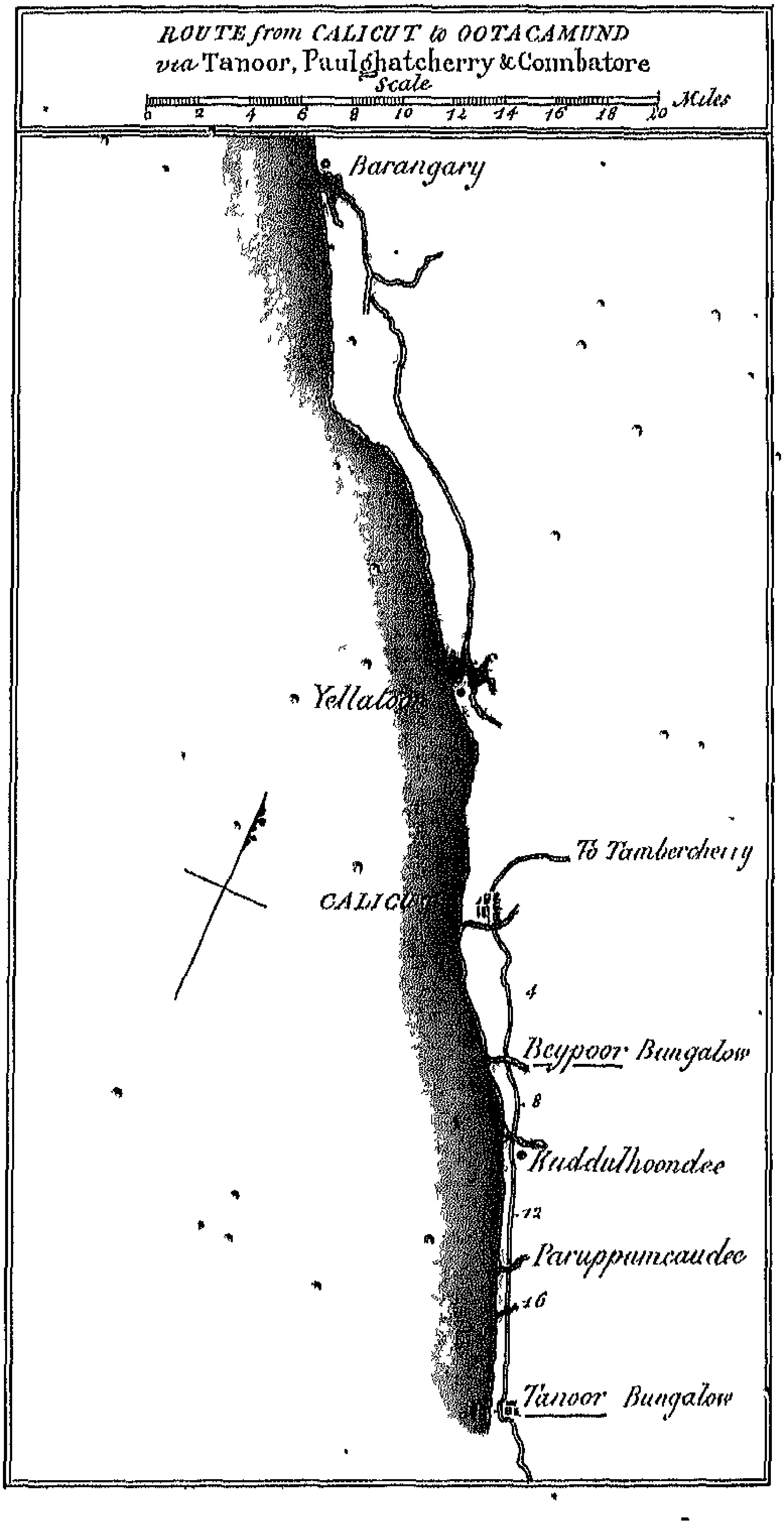

ROUTE from CALICUT to OOTACAMUND
via Tanoor, Paulghatcherry & Coimbatore

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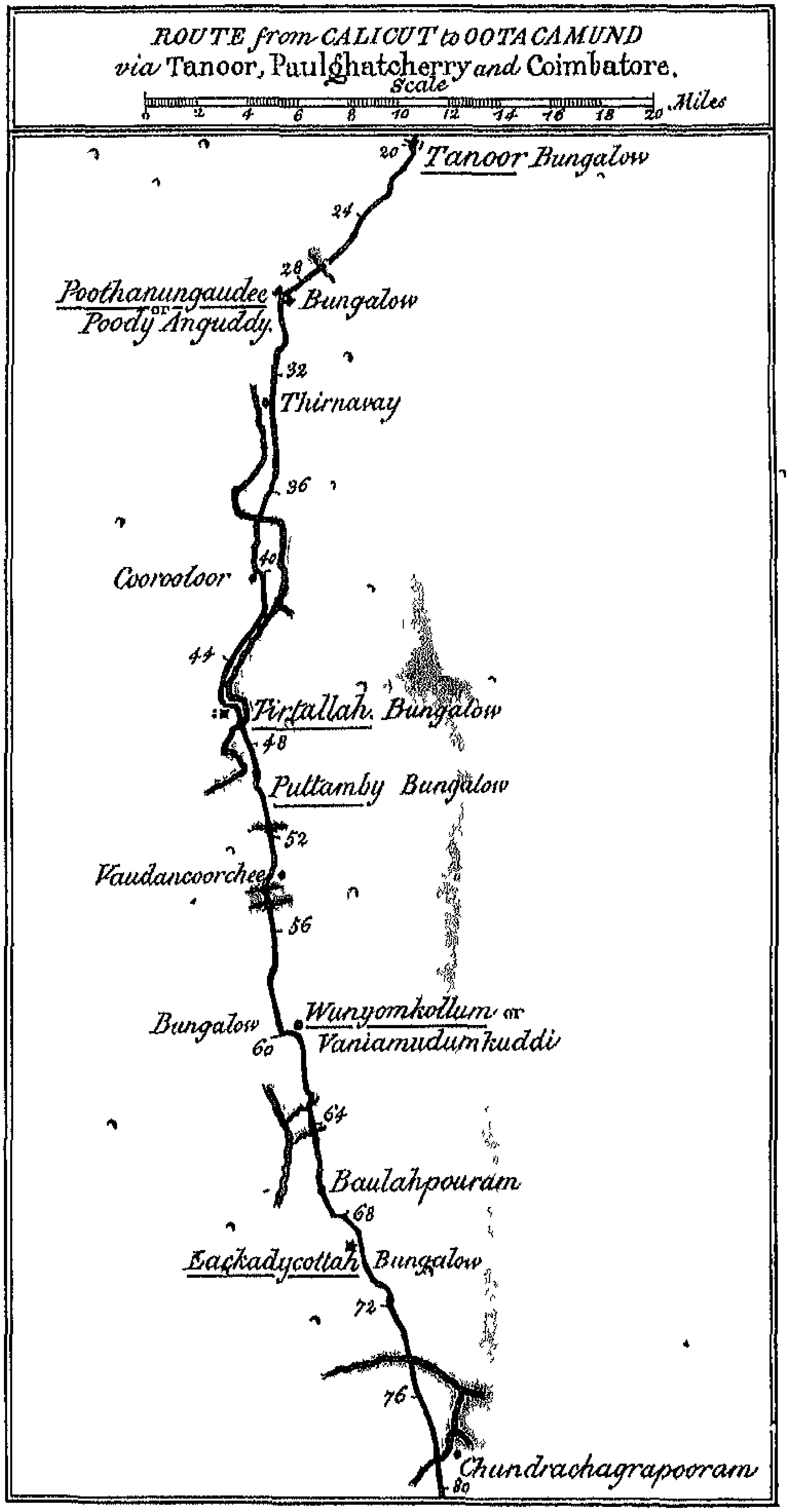

ROUTE *from* CALICUT *to* OOTACAMUND
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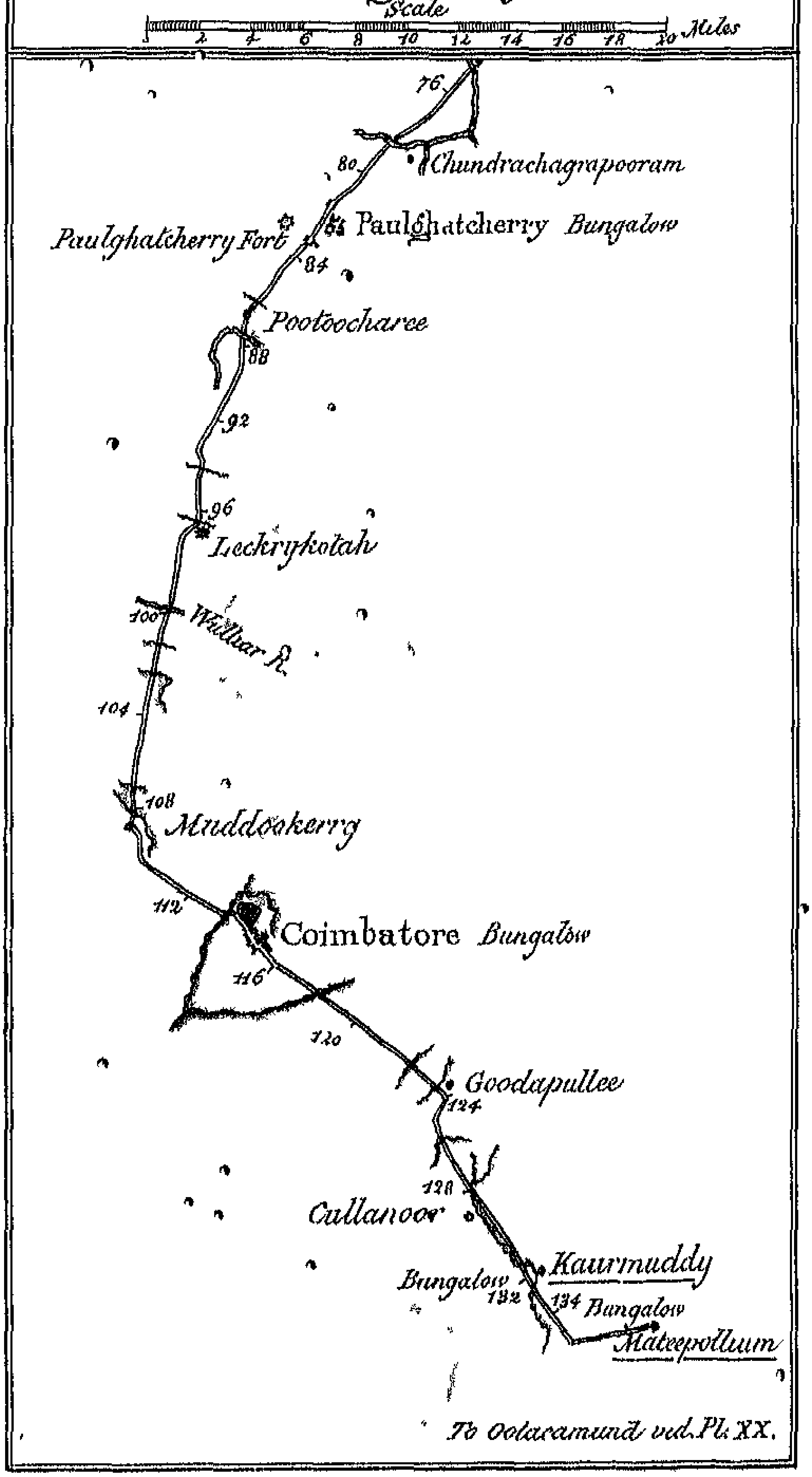
ROUTE from CALICUT to OOTACAMUND
via Tanoor, Paulghatcherry and Coimbatore.



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Pl XXVIII.

ROUTE from CALICUT to OOTACAMUND
via Tambercherry and the Goodaloor Pass

Scale

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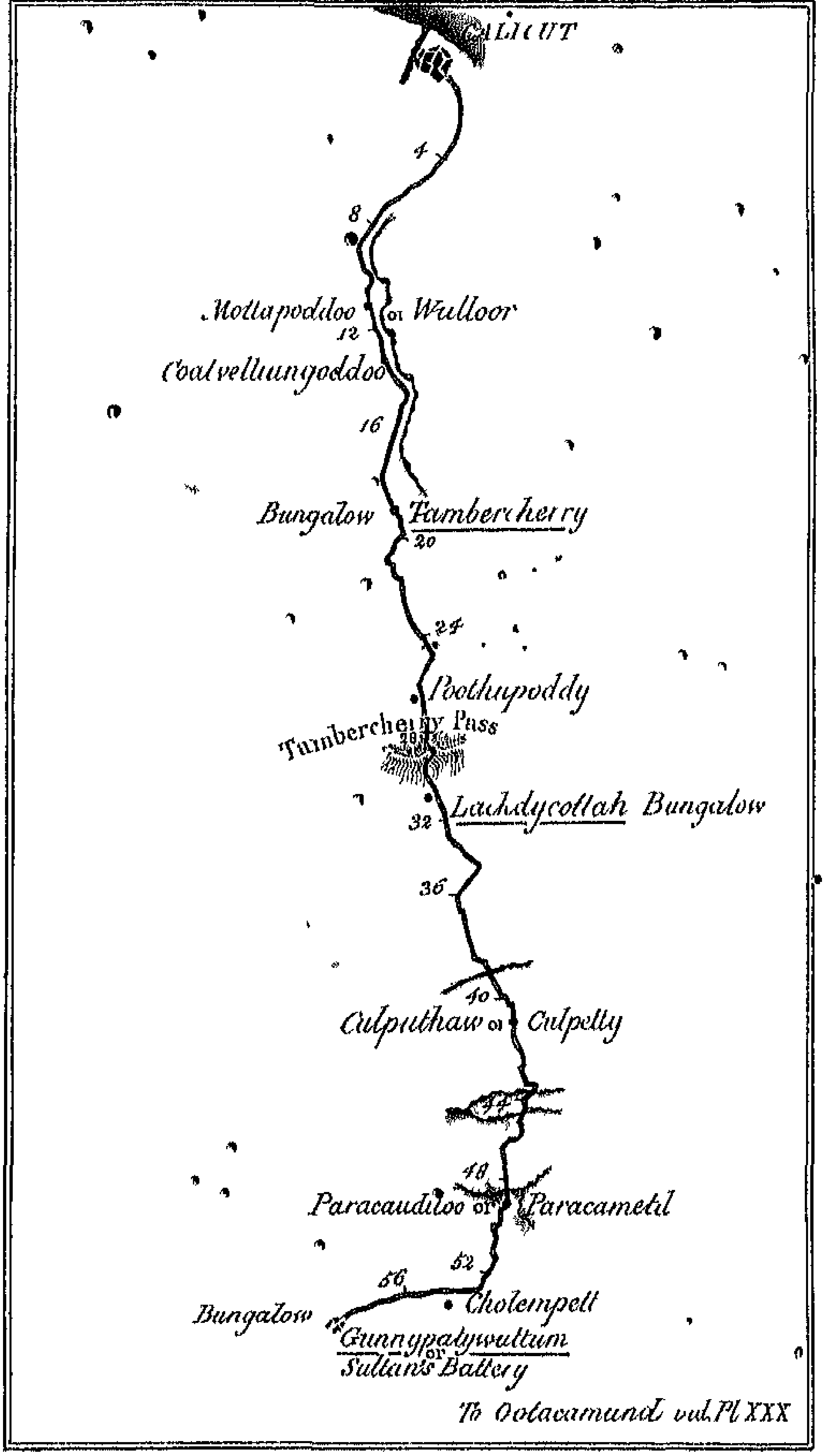

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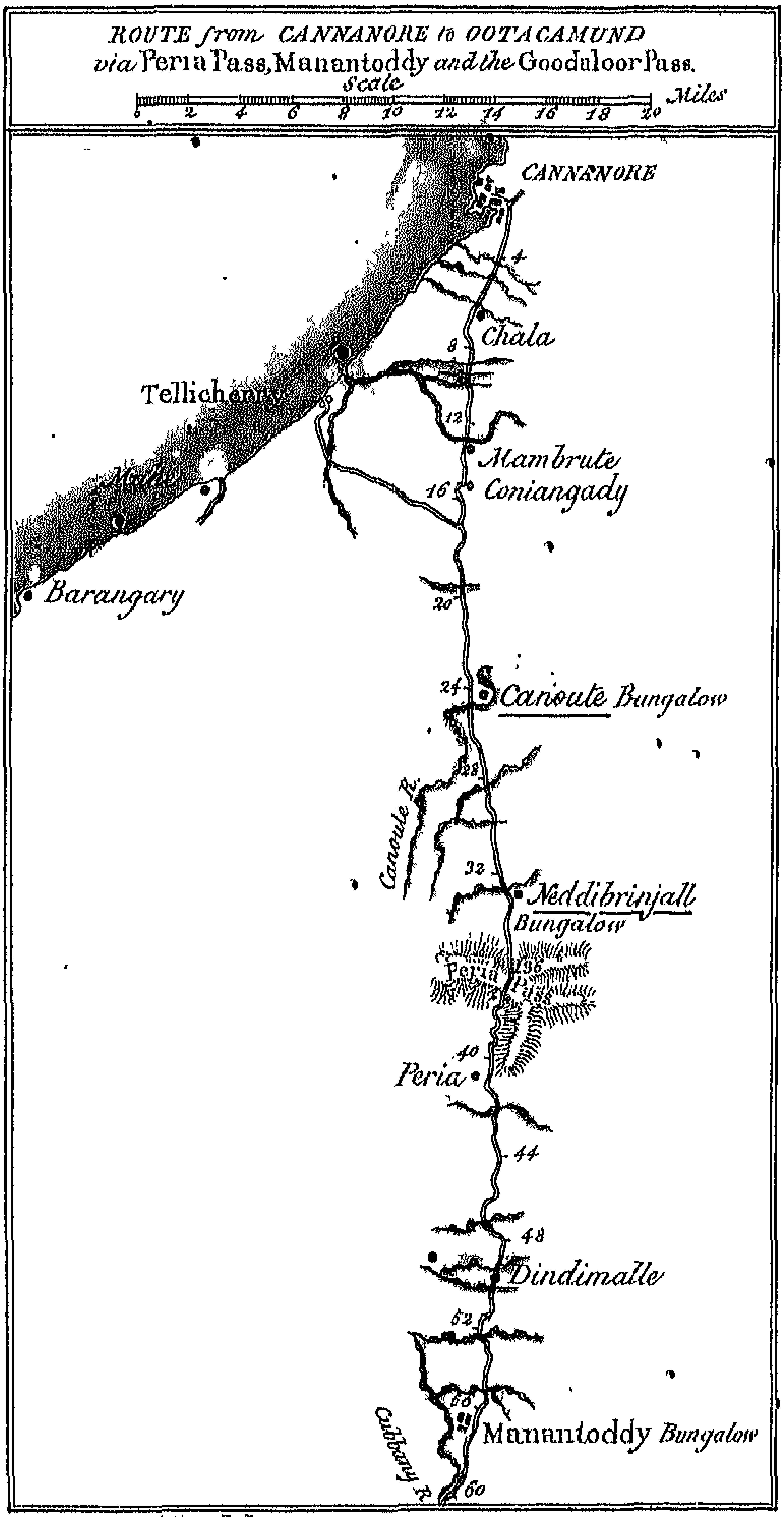
Pl. XXIX.



ROUTE *from* CANNANORE *to* OOTACAMUND
via Peria Pass, Manantoddy *and the* Gooduloor Pass.

J. B. Tassin del. et lith.

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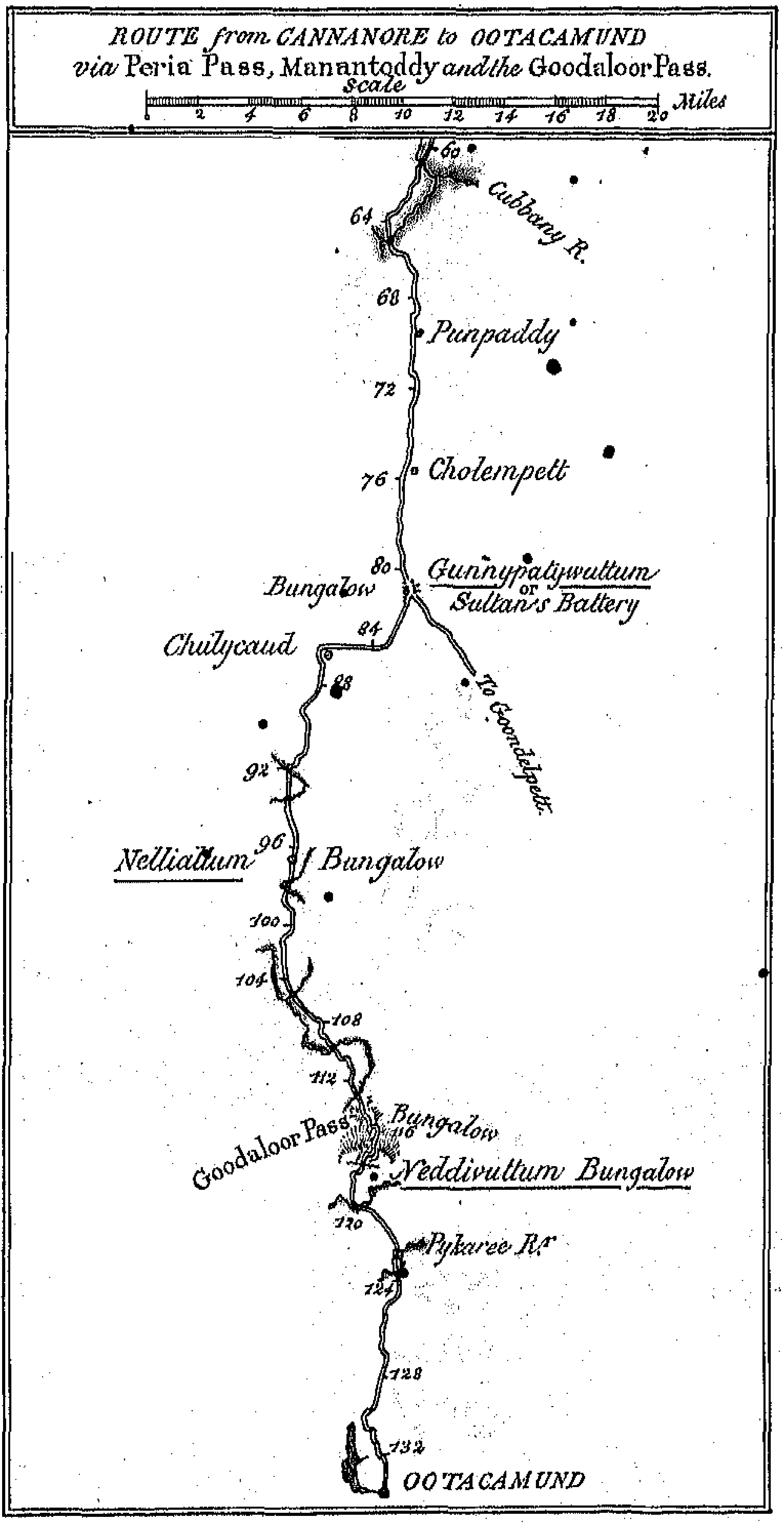
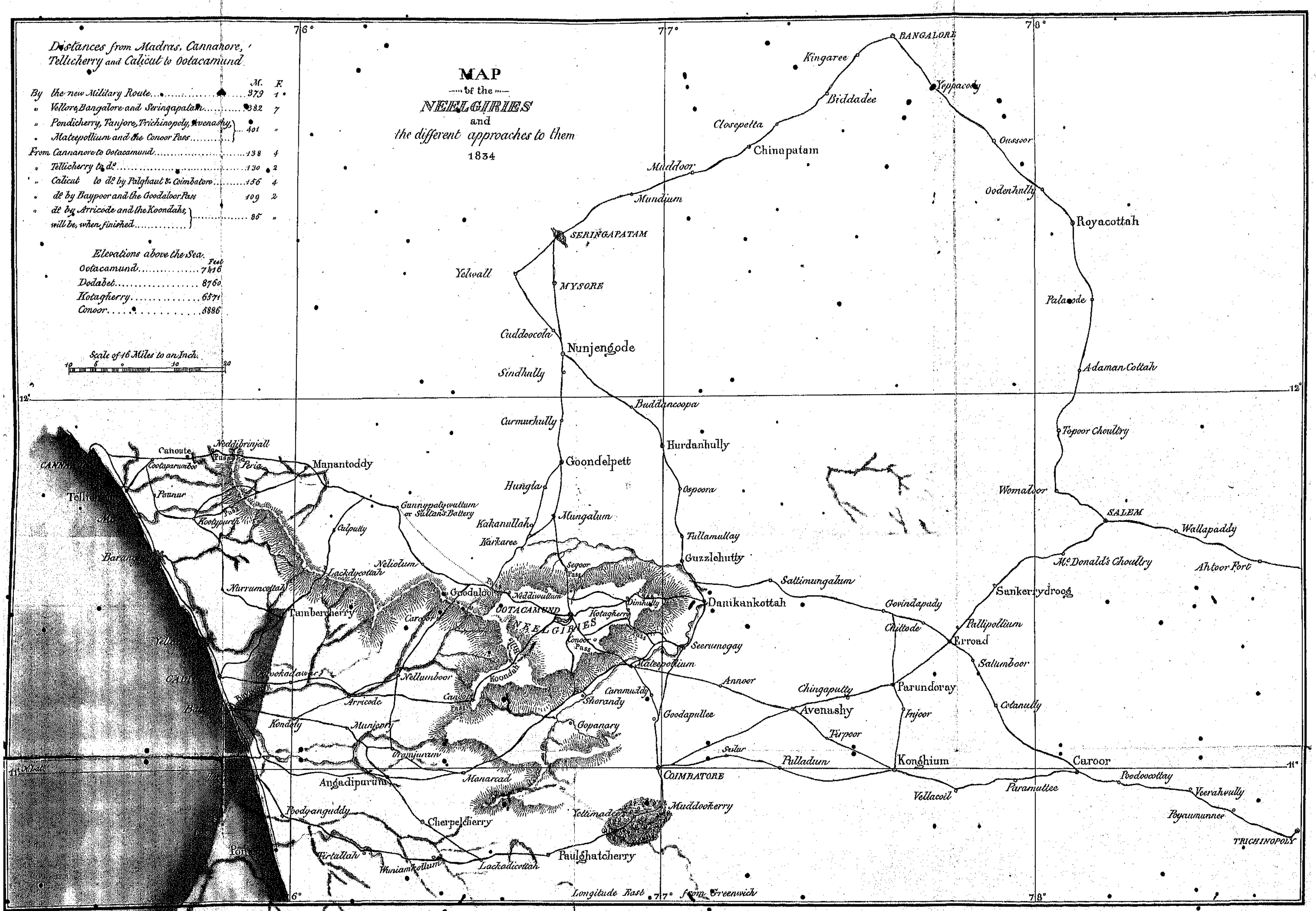
Pl. XXX.



ROUTE *from* CANNANORE *to* OOTACAMUND
***via* Peria Pass, Manantoddy *and the* Goodaloor Pass.**



MAP
of the
NEELGIRIES
and
the different approaches to them
1834

Distances from Madras, Cannanore, Tellicherry and Calicut to Ootacamund

	M.	F.
By the new Military Route	379	1
" Vellore, Bangalore and Seringapatam	382	7
" Pondicherry, Tanjore, Trichinopoly, Avenashy, Mateepollium and the Conoor Pass	401	"
From Cannanore to Ootacamund	138	4
" Tellicherry to do.	130	2
" Calicut to do. by Palghaut & Coimbatore	156	4
" do. by Baypoor and the Goodaloor Pass	109	2
" do. by Arricode and the Koondahs, will be, when finished	85	"

Elevations above the Sea.

	Feet
Ootacamund	7416
Dodabet	8760
Kotagherry	6571
Conoor	5886

Scale of 16 Miles to an Inch.

J. B. Tassin del & lith.

APPENDIX.

No. I.

Tables of Routes.

THE subjoined remarks are intended to illustrate the Table of Routes, and to assist travellers in their choice, as well as to prepare them for such difficulties as they may have to encounter.

There are three points which afford the readiest access to the hills:—

Madras on the eastern coast; Calicut, Cannanore, and Tellicherry, on the western. The two latter have several advantages; they are by more than half nearer than Madras; they presuppose a sea-voyage of at least a few days, if from the opposite coast, probably of some weeks, which is of the utmost utility in preparing invalids of most classes for the great change of climate in ascending the hills; indeed, in many cases, it may be expected that they will assist materially in eradicating the seeds of the disease, necessitating the change, and leave nothing for the European climate to do but to confirm the amendment. On the other hand, they are only accessible during ⅔ds of the year; and to invalids coming from Calcutta, it may be an objection that they have to encounter the discomfort of so long a passage, and the occasionally boisterous doubling of Cape Comorin.

Leaving my readers to form their own conclusion on this head from the section "Hints to Invalids," I shall proceed shortly to describe the different roads, beginning with those from the presidency.

On landing at Madras, those who are members of the Club* will naturally take up their abode there. Such as are not in this predicament, or are married men, with families, must of course secure a small house; in obtaining which there is generally no difficulty. They have then their choice of three† roads, one by Trichinopoly, which may be called the high road leading along the coast by Sadras, Cuddalore to Porto Nuovo, where it turns inland, through Tanjore, Trichinopoly, Caroor, Avanashy, Mootapollium, and up the Coonoor Ghat to Ootacamund.

Regular bearers are to be found at every station on this road, and are procured as far as Cuddalore, on application to the police office at Madras; thence to Trichinopoly, from the post office there; from this to Mootapollium, they are posted by the principal collector of Coimbatoor; and from Mootapollium to Ootacamund, they are furnished by the commissariat officer on the hills. This is upon the whole the most eligible, though rather the longest, road; it passes through a number of stations, with medical and every other sort of assistance at hand; there are Bungalows and supplies at every halting place; the country through which it passes is perfectly free from jungle or obstruction of any kind, and it may be travelled at all seasons without risk or delay.

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* All members of the Bengal and Bombay Clubs, are "ipso facto" members of that of Madras. See the Rules, post.

† A fourth road viâ Bangalore is the new Military road. See *Tables of Routes.*

The next road is by Salem; it is much the shortest, which is all that can be said for it, as it passes through a very uninteresting, often unhealthy, country, and there are only bungalows at certain stations; it joins the former road at Avanashy.

The third* road from Madras passes through Vellore, Bangalore, and Mysoor, and finally ascends by the Goodaloor Pass to Neddiwuttum and Ootacamund. Bearers are posted on this road as far as Arcot by the police office at Madras; hence to Baitmungalum, at the top of the Ghât, by the commissariat officer at Vellore; and through Mysoor, by those in charge at Bangalore. Hill bearers, as before, on application to the office here.

But for its passing through the broad belt of jungle between Goondlapet and Goodaloor, this road would be in many respects the most agreeable. On ascending the Nakkanairy Ghât, 30 miles beyond Vellore, the climate undergoes a most agreeable change, the table-land of Mysoor being considerably elevated†; there are excellent bungalows at every stage of 12 or 15 miles, the country to the S. of Bangalore is pleasingly diversified, and Vellore, Bangalore, Seringapatam, and Mysoor are places of considerable historical interest. There is no denying however that the passage through the jungle before-mentioned is attended with some risk, unless every precaution is taken to avoid the chance of stoppage. The point to which travellers are carried by the Mysoor bearers, and met by those from the hills, is at Karkarra, where the density of the jungle and the nature of the soil render fever almost inevitable, if one is compelled to pass the night there: so that travellers, before quitting Mysoor, should be most particular in receiving an answer from the commissariat officer on the hills, to say that bearers will be in waiting at Karkarra on an appointed day; and they should then so arrange their departure from Mysoor as to reach the verge of the jungle, 47 miles from Mysoor, and eight beyond Goondlapet, soon *after* daylight, which will secure their arriving at Karkarra early in the forenoon, the hill bearers having positive instructions not to sleep there, and not to remain longer than 3 P. M., a precaution due to humanity,—the miasm being as fatal to natives as to Europeans.

Should a traveller be so unfortunate as to be obliged to pass the night in the jungle, he should avoid yielding to sleep, keep as much in motion as the state of his health and strength will admit, have a large fire lighted, and if accustomed to the use of tobacco, light his segar; but let him beware of giving in to the common fallacy of drinking spirits, or other stimuli, the re-action following the use of which, increases the predisposition to fever; and lastly, on his arrival at Ootacamund, let him have immediate recourse to medical advice, which, it is most consolatory to state, has in every instance where it was had recourse to, completely succeeded in obviating the poisonous effects of the miasm, while the necessity of such precaution is abundantly proved by the unfortunate issue of cases where it was neglected*.

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* A fourth road viâ Bangalore is the new Military road. See *Tables of Routes.*

† 2,400 or 2,500 feet above the sea.

A variation of this route, so as to avoid the jungle, may be made by descending the Tapoor Pass from Bangalore, and joining the Salem road near Salem; this is of course seldom had recourse to, except by travellers setting out from Bangalore.

From Calicut†, on the western coast the road follows the coast, southwards to Ponany, where it strikes inland, and passes through a beautiful country to Paulghatcherry, 78 miles; from this to Coimbatoor, 30 miles, the road lies partly through a jungle, but not unhealthy or dangerous in any way: from Coimbatoor to Mootapollium is 27 miles, and thence the Coonoor Ghat, as before, leads to Ootacamund.

There is another road from Calicut, which ascends the Baypoor river to Nellumboor, thence through a deep valley (between the Neelgherries and the Tombacherry Hills) filled with jungle, to the point of the Karkoor Pass, which it ascends into Mysoor, and thence to Goodaloor, and by Neddiwuttum to Ootacamund; there are Bungalows at Arricode, Nellumboor, and Davilacottah (at the top of the Karkoor Pass); but it is seldom travelled, and is highly objectionable from the extent and unhealthy nature of the jungle. When the Koondah Pass is finished, the facility of access from the coast will be prodigiously increased; getting into a boat at Calicut in the evening, you reach Arricode easily in the morning; thence an easy run of 28 miles takes you to the top of the Koondah Pass, *in the hill climate*, and passing the night there, another run of 30 miles *on the hills*, brings you to Ootacamund on the second evening; the jungle between Arricode and the foot of the pass is stated on good authority to be unhealthy *only* in the monsoon season, when of course the coast road is on other accounts impracticable.

From Cannanore or Tellicherry, the road strikes directly inland, ascends the Peria Pass to Manantoddy, and passing through a wild and picturesque but not unhealthy country, reaches Goodaloor, and by the Goodaloor Pass and Neddiwuttum, as before, enters Ootacamund; great improvements are projected in this road‡, particularly between Sooltan's Battery and Goodaloor, and it is calculated will shorten the distance 17 or 18 miles, as well as improve the line; bearers are readily procured at Cannanore, as far as Manantoddy, where three sets are stationed for the use of travellers. This may be called the high road from Bombay, and is much frequented by officers from that presidency, who descend the coast in a Pattemar or ship, and landing at Cannanore or Tellicherry, reach the hills with ease in from four to six days.

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* See above, part 2, section 3, Jungle Fever.

† There is a public Bungalow at Calicut, and a house for strangers at Tellicherry. At Cannanore, a Parsee receives travellers in his own house.

‡ Lieutenant Pears of the Engineers, civil engineer in Malabar, is at present employed in surveying it for this purpose.

Upon the whole I should be disposed to recommend the Calicut or Cannanore route to such travellers from the Bengal presidency as have no dislike to, or expect to benefit by the sea-voyage; embarking at Calcutta, a voyage of three weeks or a month carries them to one of the above points on the coast, leaving a very short and easy land journey for themselves and baggage.

Route from Madras to Bangalore, by Streepermadoor, Baulchetty Choultry, Arcot Cantonment, Vellore, Goriattum, Naikanairy, and Colar.

Bungalows and Stations of Troops.	*Names of the Villages, Stations, &c.*			*Stages.*	
				Miles.	*Furlongs.*
B.	Coonatoor,			15	4
B.	Streepermadoor,			12	0
B.	Rajah's Choultry,			13	6
B.	Baulchetty Choultry,			10	5
B.	Caunverypauk,			11	6
T. S.	Arcot Cantonment,			9	6
	Left bank of the Palaur river,	4	0		
	Cross right bank of ditto,	1	4		
T. S.	Vellore Fort,	8	6		
				14	2
B.	Pallicondah,			14	2
	Left bank of the Palaur river,	0	3		
	Right bank of ditto,	0	5		
B.	Goriattum,	4	6		
B.	Laulpett,	9	6		
				15	4
B.	Bottom of the Pednaigdroog Pass,	4	3		
B.	Naikanairy, at the top of ditto,	5	5		
				10	0
B.	Kistnapooram,	6	2		
B.	Venkatagherry,	3	0		
				9	2
B.	Baitmungalum,			11	2
B.	Colar,			18	2
B.	Nursapoor,			9	3
B.	Ooscottah,			16	0
	Kistnarajahpooram,			8	7
T. S.	Bangalore,			9	1
	Total,			209	4

Route from Bangalore to Ootacamund, by Seringapatam and the Goodaloor Pass, also by Yelwall.

Bungalows, &c.	*Names of the Villages, &c.*	*Stages.*	
		Miles.	*Furlongs.*
B.	Kingary,	7	7
B.	Biddedy,	10	4
B.	Closepettah,	9	5
B.	Chinnapatam,	7	5
B.	Muddoor,	11	2
B.	Mundium,	11	7
B.	Webb's Monument, 2 miles N. W. of Seringapatam,		
	Seringapatam,	16	4
	Mysore,	9	4
Priv. B.	Nunjengode,	14	2
B.	Sindhully, 4 6		
	Cummerhully, 7 7		
		12	5
	Goondelpet,	9	4
B.	Mungalum,	12	0
	Karkarra,	10	3
	Goodaloor, (foot of the pass,)	8	3
	Neddiwuttum,	4	0
	Pykaree River,	7	3
	Ootacamund,	10	1
	Total,	173	3

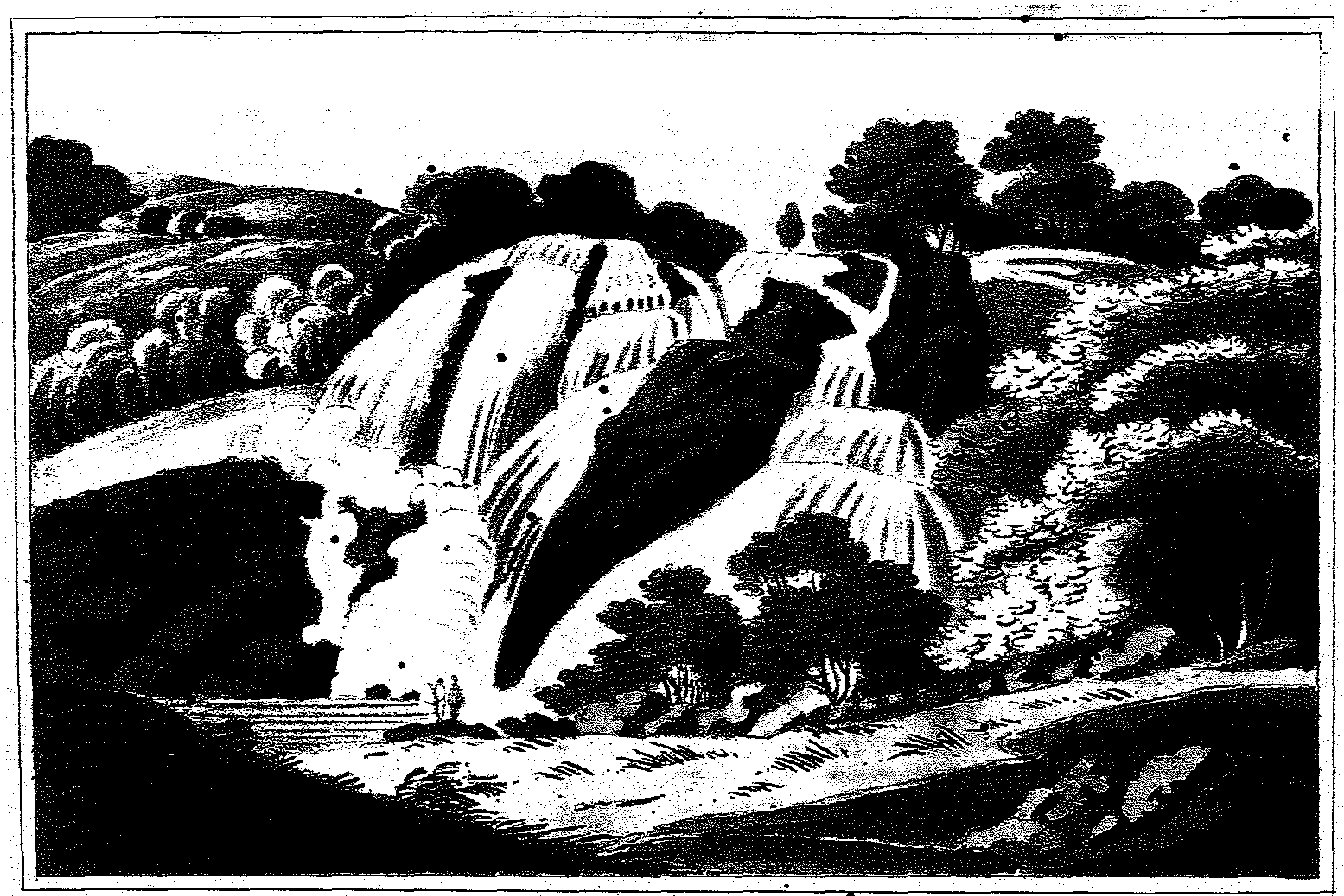
	To Seringapatam,	80	4
Priv. B.	Yelwall,	11	0
	Gooroor,	11	0
	Nunjengode,	12	0

Memorandum of the time taken to travel from Bangalore to Ootacamund viâ Yelwall.

	Hours.
Bangalore to Seringatam,	21
Yelwall,	3
Nunjengode,	6½
Toondavady,	3½
Goondelpet,	2¾
Hungla, (a village at the commencement of the jungle,)	1¾
Bundypoor,	1¾
Karkarra,	2¼
Goodaloor,	2¼
Neddiwuttum,	2
Ootacamund,	5¾
Total,	52¾

Route from Bangalore to Ootacamund, by Oossoor, Royacottah, Salem, Sankerrydroog, Erroad, Avenashey, Matypollium, and the Coonoor Pass.

Bungalows, &c.	*Names of the Villages, &c.*	*Stages.*	
		Miles.	*Furlongs.*
	Yeppacody, ...	13	0
B. and T. S.	Oossoor, ...	14	5
B.	Oodenhutty, ...	12	2
B.	Royacottah, ...	9	3
B.	Pallicode, ...	16	4
	Soogatoor, ...	12	0
B.	Adamancottah, ... 5 2		
	Appanaigpollium, ... 2 1		
		7	3
	Beginning of the Toopoor Pass, ... 3 4		
	Summit of ditto, ... 3 4		
B.	Toopoor Choultry at the bottom of ditto, 2 3		
		9	3
B.	Womaloor, ...	15	7
B. and T. S.	Salem, ...	9	4
B.	MacDonald's Choultry, ...	12	6¼
B. and T. S.	Sankerrydroog, ...	11	¼
B.	Pallipollium on the Cauvery river, ...	10	6¼
T. S.	Cross the Cauvery to Erroad fort, .. 2 0		
B.	Parundoiy, ... 11 4		
		13	4
B.	Chingaputty, ...	11	0
B. and T. S.	Avenashey, ...	11	0
B.	Annore, ...	12	5½
B. and T. S.	Matypollium, ...	13	0
	Bottom of the Coonoor Pass, ... 6 0		
B.	Coonoor on the summit of ditto, ... 5 2		
		11	2
B. and T. S.	Ootacamund, ...	9	0
	Total, ..	235	6¾



J. B. Tassin lith.

Drawn on Stone by J. Bennett.

FALLS of the CAUVERY in MYSORE

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Route from Madras to Ootacamund, by Sadras, Pondicherry, Cuddalore, Chellumbrum, Tanjore, Trichinopoly, Kongayum, Avenashy, Matypollium, and the Coonoor Pass.

Bungalows, &c.	*Names of the Villages, &c.*			*Stages.*	
				Miles.	*Furlongs.*
	Coonoor Nynapillay Choultry,			13	4
	Tereeporooi,			12	2
	Palavakaren Choultry,			8	0
B. and T. S.	Sadras,			7	2
	Coowatoor,			7	7
B.	Alumparvah,			14	2
B.	Thaumpunkum,	2	6		
	Canjemere,	10	4¾		
				13	2¾
T. S.	Pondicherry,			11	¼
B.	Munjucoopum,	12	6		
T. S.	Cuddalore, Chief's house,	0	5¼		
				13	3¼
B.	Chonian Choultry,	9	¼		
	Poondea Coopum,	0	6¼		
				9	6½
B.	Chellumbrum,			15	1¾
B.	Ammarpellah,	0	7¼		
B. and T. S.	Shealy,	11	¼		
				11	7½
B.	Myaveram,			13	0
	Tivellumgaud,			10	4
B. and T. S.	Coombaconum,			13	4
	Paupanasum,			8	0
T. S.	Tanjore,			14	6
B.	Singyputty,			15	1
B.	Tovagoody,			9	7
B.	Trichinopoly,			12	6
	Nungaveram,			13	6
B.	Poyamonee,	3	3		
B.	Veravally,	10	1		
				13	4
B.	Poodoocottay,			13	0
B.	Caroor,			8	2
B.	Paroamutty,			12	4
B.	Vellacoil,			13	4
B.	Conghium,			12	1
	Tirpoor,			16	6
B. and T. S.	Avenashy,			8	5
B.	Annore,			12	6½
B.	Matypollium,			13	0
	Bottom of the Coonoor Pass,	5	0		
B.	Coonoor on the summit of ditto,	6	2		
				11	2
B. and T. S.	Ootacamund,			9	0
	Total,			393	1⅜

Route from Madras to Ootacamund, by Chingleput, Tindevanum, Teroovanellore, Tiagar, Salem, Avenashy, Matypollium, and the Coonoor Pass.

Bungalows, &c.	*Names of the Villages, &c.*			*Stages.*	
				Miles.	*Furlongs.*
	Saint Thomas' Mount,	8	0		
B.	Meenumbakum,	2	5		
				10	5
B.	Vendaloor Choultry,			9	1
B. and T. S.	Chingleput,			16	2
B. and T. S.	Carangooly Fort,			13	6
B.	Atcherawauk,			11	1
B.	Wullakoor,			9	4
B. and T. S.	Tindivanum,			6	6½
B.	Vieravady,			15	7½
B.	Villapooram,			8	6½
B.	Yanavamungalum,	13	1¾		
B.	Teroovanellore,	3	4¼		
				16	6
	Adinoor,			13	0
	Tiagar,			14	0
	Oohoor,			8	5
B.	Chinna Salem,			10	4
B.	Tallewarsell,			9	2
B.	Alitoor Fort,			10	6½
	Poolrayoondenpollium,			9	1
B.	Walapaddy,	5	4¼		
	Motampetty,	1	1¼		
				6	5½
B. and T. S.	Salem Fort,			15	7¼
B.	McDonald's Choultry,			12	6¼
B. and T. S.	Sankerrydroog,			11	¼
	Pallipollium on Cauvery River,			10	5¾
T. S.	Cross the Cauvery River to Errond Fort,	2	0		
B.	Parundory,	11	4		
				13	4
B.	Chengaputty,			11	0
T. S. and B.	Avenashy,			11	0
B.	Annore,			12	5½
B. and T. S.	Matypollium,			13	0
	Bottom of the Coonoor Pass,	5	0		
B.	Coonoor on the summit of ditto,	6	2		
				11	2
B. and T. S.	Ootacamund,			9	0
	Total,			332	4½

The New Military Route from Madras to Ootacamund, by Bangalore.

Bungalows, &c.	Names of the Villages, &c.			Stages.	
				Miles.	Furlongs.
T. S.	Poonamallee Fort,			12	4
	Koratoor New Choultry,			8	1
B.	Perimbaukum,			11	3
B.	Pulloor,	11	4		
	Trimapoor,	2	2		
				13	6
B.	Alleepaukum,			10	1
	Alleekolum,			9	4
B.	Trevellum,	7	4		
	Curnumpett,	3	1		
				10	5
B.	Laitary Fort,			11	2
B.	Goriattum,			13	
B.	Laulpett, near Sautghur,			9	6
B.	Buttrapilly, bottom of the Pednaigdroog Pass,	4	3		
B.	Naikanairy, at top of ditto,	5	5		
				10	0
B.	Kistnapooram,	6	2		
B.	Venkatagherry,	3	0		
				9	2
B.	Baitmungalum,			11	2
B.	Colar,			18	2
B.	Nursapoor,	9	3		
	Belloor,	0	7		
				10	2
B.	Oosecottah Fort,			15	1
	Fort-gate of Bangalore,			15	0
	Total,..			205	6

Route from Cannanore to Ootacamund, by the Peria Pass, Manantoddy, and the Goodaloor Pass.

Bungalows, &c.	Names of the Villages, &c.			Stages.	
				Miles.	Furlongs.
	Cottiangaddy,			15	4
B.	Canote,			9	2
B.	Neddybrinjaul,			12	2
	Bottom of the Peria Pass,	0	6		
	Post at top of ditto,	2	6		
	Peria,	2	0		
				5	4
B. and T. S.	Manantoddy,			15	0
	Pongrathacottah,			12	4
B.	Gunnapattywuttum, or Sultan's Battery,			16	0
	Chooliah,			8	0
B.	Nelyalom,			8	0
B.	Goodaloor, at the bottom of the Ghât,			1	0
B.	Neddiwuttum, on the summit of ditto,	4	0		
B.	Pykaree,	7	3		
				11	3
B. and T. S.	Ootacamund,			10	
	Total,..			138	4

Route from Calicut to Ootacamund, by Paulgautcherry, Coimbatoor, Matypollium, and the Coonoor Pass.

Bungalows, &c.	Names of the Villages, &c.	Stages.	
		Miles.	Furlongs.
B.	Beypoor, 6 2		
	Chalyum, 1 3		
		7	5
B.	Tanoor,	12	6
B.	Batulpoodyanguddy, 8 3		
B.	Mr. Warden's Bungalow, 2 3		
	Thernavery, 1 5		
		12	3
B.	Tirtallah,	12	4
B.	Patamby, 3 7		
B.	Wunyomkollum, 11 1		
		15	0
B.	Lackadycottah, 8 5		
	Mangaree, 3 2		
		11	7
B. and T. S.	Paulghautcherry,	12	4
	Wulliam River,	15	3
	Muddookairy,	9	1
B. and T. S.	Coimbatoor,	6	4
	Goodaloor,	11	0
B. and T. S.	Matypollium,	9	0
	Cullaur River, at the bottom of the Coonoor Pass, 5 5		
B.	Summit of ditto, 6 2		
		11	7
B. and T. S.	Ootacamund,	9	0
	Total,..	156	4

Route from Calicut to Ootacamund, by the Tambercherry Pass and the Goodaloor Pass.

Bungalows, &c.	Names of the Villages, &c.	Stages.	
		Miles.	Furlongs.
	Wulloor,	9	4
B.	Tambercherry,	9	4
	Bottom of the Tambercherry Pass, 8 6		
	Top of ditto, 2 0		
B.	Lackdycottah, 0 4		
		11	2
	Culpetty,	10	6
	Paracametil, 7 3		
B.	Gunnypatywuttum, or Sultan's Battery, 8 3		
		15	6
	Choollah,	8	0
B.	Nelyalom,	8	0
B.	Goodaloor, at the bottom of the Pass,	15	0
B.	Neddiwuttum, on the summit of ditto, 4 0		
B.	Pykaree River, 7 3		
		11	3
B. and T. S.	Ootacamund,	10	1
	Total,..	109	2

Route from Tellicherry to Ootacamund by the Peria Pass, Manantoddy, and the Goodaloor Pass.

Bungalows, &c.	*Names of the Villages, &c.*			*Stages.*	
				Miles.	*Furlongs.*
B.	Cotaparamba, ...			8	4
B.	Canote, ...			8	0
B.	Neddybrinjaul, ...			12	2
	Bottom of the Peria Pass, ...	0	6		
	Post at the top of ditto, ...	2	6		
	Peria, ...	2	0		
				5	4
B. and T. S.	Manantoddy, ...			15	0
B.	Panarathacottah, ...			12	4
B.	Gunnaputtywuttum, or Sultan's Battery, ...			16	0
	Choolilah, ...			8	0
B.	Nelyalom, ...			8	0
B.	Goodaloor, at the bottom of the Pass, ...			15	0
B.	Neddiwuttum, on the summit of ditto,	4	0		
B.	Pykary River, ...	7	3		
				11	3
B. and T. S.	Ootacamund, ...			10	1
	Total,..			130	2

◆

Route from Calicut by the Baypoor River, Arricode, Canoot, and the New Koondah Pass, to Ootacamund, (projected and only partly made.)

		Miles.
	From Calicut by the river to Arricode, ...	27
B.	Arricode to Canoot, at the foot of the Pass, ...	15
	Canoot to top of pass on the Koondahs, (road marked out,) ...	13
B.	Avalanche Bungalow, (on the hills, road marked out,)	15.4
	Ootacamund, (road partly marked out,)	14.4
	Total,...	85

◆

OFFICIAL MEMORANDA.

The duty of attending to applications, and of posting bearers to and from the Neilgherries, is allotted to a warrant or other officer, and to ensure prompt reply to requisitions, it is requested that letters be addressed.

"BEARERS.
TO THE OFFICER IN CHARGE OF BEARERS.
Commissariat Office, Neilgherries."

The comfort of travellers will be best consulted by their awaiting the receipt of intimation of the day on which hill bearers can be supplied at

Karkaree from Mysore.
Goodaloor from the western coast.
Metapollium from the southward,
Or from Paulgautcherry.

And until so informed, it is strongly recommended that they do not approach nearer to the hills, than

Goondilpet in Mysore.
Manantody in the Wynaad District.
Coimbatoor, Salem, or Avinashy, by Metapollium, by the Conoor Ghaut.

The following are the rates of hire established:

One set from Ootacamund.

	Rs.	*A.*	*P.*
To Karkaree,	16	11	1
" Metapollium,	10	2	5
" Goodaloor,	11	7	1
" Kotagherry,	7	9	4
" Coonoor,	5	1	3
" Kaikunhuly,	19	[illegible]	2
" Pycarry,	5	1	3

For the accommodation of persons residing at Ootacamund, eight bearers, but no smaller number, are supplied by the day at 2 rupees, when not required for travellers.

(Signed) R. CREWE,
Assistant Commy. Genl.

Commissariat Office, Nei'gherry Hills,
Ootacamund, 29th Dec. 1831.

MEMORANDUM relative to the hire of bazar and public bearers.

The hire of a bearer per day is 4 annas—for half a day, 2 annas.

Bearers engaged before 1 o'clock are entitled to full hire for the day, and after 1 o'clock, until ½ past 6 P. M. to half hire.

Full hire is also chargeable when bearers are employed for evening parties, or ½ past 6 P. M.

To avoid delay and disappointment, it is recommended, that application for bearers be addressed to the Commissariat Office, or sent to the Cutwal's Choultry, in the form of a Memorandum, specifying the number of bearers required, and the hour at which they are wanted.

(Signed) C. F. LEHARDY,
S. A. C. Genl.

Commissariat Office, Ootacamund, 1st May, 1833.

BEARERS *from Ootacamund to Mysore or Bangalore.*

Notice is hereby given, that the Commission for the Government of Mysore having continued to Mr. Van Ingen, (the Head Clerk of the Presidency Office at Mysore,) the appointment of Agent for Bearers, all applications for posting bearers, between Karkaree and Bangalore and Kakenkotah and Bangalore, are requested to be addressed to Mr. Van Ingen, as heretofore.

Two sets of bearers will be available at each stage, and will be charged for at the following rates :

One set of Bearers and a Mussalchee.

	Rs.	A.	P.
From Bangalore to Biddedy,	6	0	0
" Biddedy to Chennapatam,	6	0	0
" Chennapatam to Muddoor,	5	0	0
" Muddoor to Mundlum,	5	0	0
" Mundlum to Seringapatam,	6	0	0
" Seringapatam to Mysore,	5	0	0
" Mysore to Nunjengode,	5	0	0
" Nunjengode to Tondovady,	5	0	0
" Tondovady to Goondilpet,	5	0	0
" Goondilpet to Bundypoor,	5	0	0
" Bundypoor to Karkaree,	5	0	0
" Mysore to Chuttenhully,	5	0	0
" Seringapatam to Yelwall,	6	0	0
" Yelwall to Kenchengode,	5	0	0
" Kenchengode to Nunjengode,	5	0	0
" Mysore to Yelwall,	5	0	0
" Chuttenhully to Humpapoor,	5	0	0
" Humpapoor to Untersuntah,	5	0	0
" Untersuntah to Kakenkotah,	5	0	0
" Kakenkotah to Bavullynalah,	5	0	0
For each cowry cooly per stage,	0	6	4

Batta will be charged per day for each set of bearers and a mussalchee at the rate of one rupee per stage, should they be obliged to wait for a traveller at their posts beyond the appointed day.

A statement of the expences, under the signature of the Agent, will be presented to travellers on their passing through Mysore ; and it is requested that payment of the bill, in *cash*, may be made to the person deputed by the Agent to receive it, and who will reside at the public bungalow at Mysore.

Travellers are advised to ascertain that bearers can be posted for them by the authorities on the Neilgherry Hills at Karkaree before they apply for bearers from Mysore to Karkaree ; or, at any rate, not to leave Goondilpet without such assurance, as the Mysore bearers will only proceed with travellers as far as Karkaree, and where they will be met by the hill bearers.

When Mysore bearers are required to be posted by travellers coming from the Neilgherry Hills at Karkaree, intimation should be sent to the Agent at Mysore, and the exact day the travellers will arrive at Karkaree must be stated, as the Mysore bearers will not remain at Karkaree during the night.

Every traveller is advised, on coming from the hills, to quit the top of the Goodaloor Ghaut early in the morning, and by this means he will reach Goondilpet, where there is an excellent bungalow and accommodation, on the same evening.

For the same reason, travellers should leave Goondilpet early in the morning, to enable the Mysore bearers to return to their stations before night-fall. This is absolutely necessary, as the bearers refuse to leave Goondilpet late in the day.

By leaving Goondilpet early in the morning, a traveller will arrive at the bungalow on the top of the Neilgherries about 6 in the evening.

Travellers by this arrangement may possibly be detained for a few hours at Goondilpet; but, as by any other arrangement, the unfortunate bearers' lives may be sacrificed*, it is hoped that this recommendation will be duly attended to.

(Signed) C. M. LUSHINGTON,
Commissioner.

Mysore, 17th Dec., 1831.

Bearers from the Hills to Cannanore.

Notice is hereby given, that the Government have, with the view of meeting the comforts of travellers, stationed three sets of bearers at Manantoddy, under the orders of the officer commanding in Wynaad, and who will be available for travellers as far as Goodaloor, on the Neilgherry road, Kakenkotah, on the Mysore road, and Periah, on the Cannanore road.

The bearers are in the pay of Government, who have sanctioned the following rates, viz.

For one set of Bearers.

	Rs.	*A.*	*P.*
From Kakenkotah, to Bavully,..	5	0	0
" Bavully to Manantoddy, ...	6	0	0
" Manantoddy to Periah, ...	8	0	0
" Manantoddy to Pavorntcottah, ...	6	8	0
" Pavorntcottah to Sultan's Battery, ...	8	0	0
" Sultan's Battery to Nelliah, ...	8	0	0
" Nolliah to Goodaloor, ...	8	0	0
For each Cowry cooley per stage, ...	0	8	0

Batta will be charged per day for each set of bearers at the rate of two rupees for stoppage, should they be obliged to wait for a traveller at their posts, and on no account will they be allowed to remain longer than three days.

Travellers are advised to ascertain that bearers can be posted for them by Captain Minchin, commanding in Wynaad, before leaving the Neilgherry Hills, that they may not be delayed at Goodaloor.

It is requested also that the word "Bearers" may be written on the envelope of the letters applying for the same.

(Signed) F. MINCHIN, *Capt.*
Commg. Wynaad.

(A true copy)
(Signed) C. F. LEHARDY,
S. A. C. Genl.

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* By sleeping in the Jungle.

Table shewing the Rates of Bearers, Cooley, Bullock, and Cart Hire, from Ootacamund to different places on the hills, and at the foot of the ghauts.

Names of Places.	Distance from Ootacamund.	For a Dooly Bearer.			For a Cooley.			For a Bullock.			For a country cart with two bullocks.			Remarks.
	Miles.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	
From Ootacamund to Metapollium,	20	0	12	6	0	10	0	1	4	0	4	0	0	
Ditto ditto to Kaikaree,	32½	1	4	3	0	15	0	1	12	6	5	6	0	
Ditto ditto to Goodaloor,	22½	0	14	1	0	11	3	1	6	6	4	8	0	
Ditto ditto to Neddiwuttum,	17½	0	10	11	0	8	9	1	6	6	3	8	0	
Ditto ditto to Coonoor,	10	0	6	3	0	5	0	0	10	0	2	0	0	
Ditto ditto to Kootagherry and Dimhutty,	15	0	9	4	0	8	0	0	15	0	0	0	0	
Ditto ditto to Ralliah,	10	0	6	3	0	5	0	0	10	0	0	0	0	
Ditto ditto to Pycarry,	10	0	6	3	0	5	0	0	10	0	2	0	0	
Ditto ditto to Koondah Ghaut,	30	1	2	9	0	15	0	1	14	0	6	0	0	
Ditto ditto to Kaitee,	3¾	0	2	3	0	2	0	0	3	9	0	12	0	
Ditto ditto to Nelletory,	20	0	12	6	0	10	0	1	4	0	0	0	0	
Ditto ditto to Nunjenad,	7	0	4	4	0	3	6	0	7	0	1	6	5	
Ditto ditto to Seagore,	13	0	8	2	0	6	6	0	13	0	0	0	0	
Ditto ditto to Billicul,	7	0	4	4	0	3	6	0	7	0	1	6	5	
Ditto ditto to Avalanche,	15	0	9	4	0	7	6	0	15	0	3	0	0	
Seereemoogah viâ Kotagherry,	30	1	2	9	0	15	0	1	14	0	0	0	0	
Seereemoogah viâ Metapollium,	25	0	15	7	0	12	6	1	9	0	4	7	0	
Ditto ditto Soondaputty,	25	0	15	7	0	12	6	1	9	0	0	0	0	
Per day within cantonment.		0	4	0	0	3	0	0	5	0	1	0	0	
Ditto moving about the hills, across the country,		0	4	6	0	4	0	0	6	0	0	0	0	
For every 7 miles on the hills,		0	4	6	0	4	0	0	6	0	0	0	0	
Batta per Day when halting,		0	2	0	0	2	0	0	2	3	0	8	0	

Police Office, Ootacamund, 1st May, 1833.

N. B. 50 lbs. is considered a cooly load on the hills.

A Table *exhibiting the probable period of the Passages, between Calcutta and Calicut, and Calcutta, and Madras, (to and from,) for each month of the year.*

Month.	From the Sandheads to Calicut.	From Calicut to the Sandheads.	From the Sandheads to Madras.	From Madras to the Sandheads.	Remarks, &c.
	days.	days.	days.	days.	
January,	15 to 25	40 to 50	5 to 10	20 to 30	North-east monsoon in the bay, land and sea breezes on the Malabar Coast.
February,	20 to 30	20 to 30	10 to 20	5 to 15	South-west winds on the western side of the bay, middle of the bay light variable winds and calms. North-west winds prevail on the Malabar Coast in March and April.
March,	30 to 40	13 to 25	15 to 25	5 to 10	
April,	35 to 45	13 to 25	15 to 25	5 to 10	
May,	....	.... ..	15 to 25	5 to 10	Regular south-west monsoon all over the bay.
June,	Malabar	Coast	20 to 30	5 to 10	
July,	shut	these	20 to 30	5 to 10	
August,	months.	......	20 to 30	5 to 10	
September,	35 to 50	15 to 25	10 to 20	10 to 15	South-west monsoon on the decrease.
October,	25 to 40	25 to 40	10 to 20	15 to 25	Winds light and variable.
November,	15 to 25	40 to 50	5 to 10	20 to 30	Regular north-east monsoon in the bay, land and sea breezes on the Malabar Coast.
December,	15 to 25	40 to 50	5 to 10	20 to 30	

To Cannanore and Tellichery may be considered one day more.

Statement of the Time, including all Stoppages, occupied, on an average, by the Mails which were dispatched from the General Post Office at Madras, in the months of April, May, June, and July, 1824, *in travelling to different Stations.*

Stations.	Miles.	Time of travelling from Apr to July.	
		Ds.	Hs.
Northerly.			
Calcutta,	1,014	11	15
Ganjam,	673	6	20
Chicacole,	537	5	16
Vizagapatam,	481	5	2
Rajamundry,	363	3	18
Ellore,	309	3	2
Masulipatam,	297	3	0
Guntoor,	2[illegible]0	2	10
Ongole,	186	1	19
Nellore,	109	1	1
Southerly.			
Quilon,	430	4	6
Palamcottah,	385	3	14
Madura,	288	2	14
Trichinopoly,	208	1	22
Tanjore,	220	2	5
Negapatam,	198	2	1
Combaconum,	197	1	23
Cuddalore,	119	1	4
Pondicherry,	103	1	0
Chingleput,	36	0	8
Westerly.			
Bombay,	836	9	18
Hurryhur,	410	4	5
Chittledroog,	359	3	16
Cannanore,	449	4	17
Tellicherry,	442	4	13
Mysore,	320	3	6
Seringapatam,	311	3	3
Mangalore,	435	4	18
Nundydroog,	259	2	12
Bangalore,	221	2	4
Vellore,	87	0	21
Chittoor,	104	1	0
Arcot,	75	0	17
North-Westerly.			
Hydrabad,	472	5	1
Bellary,	316	3	16
Kurnool,	293	3	9
Gootty,	262	3	3
Cuddapah,	171	1	23
South-Westerly.			
Calicut,	433	4	17
Coimbatore,	319	3	1
Salem,	223	2	3

Memorandum of the Current Prices of the under-mentioned Articles in the Bazar at Ootacamund, for the month of September, 1833.

Sorts.		Prices.		
		R.	*A.*	*P.*
1st Sort Beef,	per lb.	0	3	0
2nd ditto ditto,	ditto	0	2	0
1st ditto Corn Beef,	ditto	0	3	6
2nd ditto ditto,	ditto	0	2	6
Fillet Veal,	ditto	2	8	0
Corn Veal,	ditto	0	3	6
1st sort Ham,	ditto	0	12	0
2nd ditto ditto,	ditto	0	10	0
1st sort Bacon,	ditto	0	5	0
2nd ditto ditto,	ditto	0	4	0
1st sort Sheep,		4	0	0
2nd ditto ditto,		3	0	0
3rd ditto ditto,		1	8	0
Saddle of Mutton, 1st sort,		2	8	0
Hind-quarter of ditto ditto,		1	8	0
Fore-quarter of ditto ditto,		1	4	0
Leg of ditto ditto,		0	12	0
Neck and Breast,		0	7	0
Saddle of Mutton, 2nd sort,		1	8	0
Fore-quarter of ditto ditto,		0	8	0
Hind-quarter of ditto ditto,		0	10	0
Leg of ditto ditto,		0	6	0
Neck and Breast,		0	5	0
Liver, each,		0	1	0
Heart,		0	8	0
Bread, 1st sort,		0	3	0
Ditto, 2nd ditto,		0	1	6
Common Biscuits, per lb.		0	6	0
Sweet ditto, ditto ditto,		0	8	0
Butter ditto, ditto ditto,		0	8	0
Wheat flour, pucka seer, 1st sort,		0	8	0
Ditto ditto, 2nd ditto,		0	4	0
Ditto ditto, 3rd ditto,		0	1	6
Rolong, 1st sort,		0	8	0
Ditto, 2nd ditto,		0	6	0
Seer of Bran,		0	0	8
1 bottle of Milk,		0	3	0
1 ditto of ditto Buffalo,		0	2	0
1 cup of Butter, 1st sort,		0	8	0
1 Ditto ditto, 2nd ditto,		0	6	0
1 Ditto ditto, 3rd ditto,		0	4	0
1 Bottle of Lamp Oil,		0	2	6
1 Ditto of Coconnut ditto,		0	4	0
1 Ditto of sweet Gingely ditto,		0	3	0
1 Ditto of Ghee, 1st sort,		0	4	0
1 Ditto of ditto, 2nd ditto,		0	3	0
1lb. Sugar, 1st ditto,		0	4	3
1 Ditto ditto, 2nd ditto,		0	3	6
Rice, 1st sort, 6 seers per		1	0	0
Ditto, 2nd ditto, 7½ ditto,		1	0	0
Ditto, 3rd ditto, 8½ ditto,		1	0	0
B. Gram, 6 seers,		1	0	0
Coolty, 9 seers,		1	0	0
Fowl, 1st sort, each,		0	4	0
Ditto, 2nd ditto,		0	3	0
Chicken,		0	2	6
3 Fowl's Eggs, 1st sort,		0	1	0
5 Ditto ditto, 2nd ditto,		0	1	0
Ducks, 1st ditto, per pair,		1	12	0
Geese, 1st sort each,		3	8	0
Turkey, 1st sort,		5	0	0
Ditto, 2nd ditto,		3	8	0
Fat Kid,		1	[illegible]	0
Calf's Head and Feet,		1	12	0
Sheep's Head and Feet,		0	1	4

T. B. DOVETON, *Supt. of Police.*

No. II.

Table of Heights.

There are three methods of ascertaining the height of any given point above the level of the sea:

I. By trigonometrical measurement, which, if correctly executed with good instruments, is by far the most to be depended on. The majority of heights in the subjoined table are taken from the trigonometrical survey of the hills by Captain Ward, and are undoubtedly as nearly accurate as possible.

II. The next method is to ascertain the exact temperature at which water boils, it having been found that the point of ebullition sinks in an exact ratio with the diminished density of the air. The difference of elevation deduced from the experiments of Saussure, appears to be about 987.5 feet for each centesimal degree of decrease in the point of ebullition*; but to execute this experiment accurately requires a delicate thermometer made for the purpose, the upper part of the stem being much prolonged, and minutely divided; it is also essential to use distilled water, to apply a correction for the actual temperature of the air, &c.

The following was the result of the experiment, made in a rough way, at Ootacamund, supposing the point of ebullition, at the level of the sea, to be 100° (212° Fahrt.) The thermometer plunged repeatedly into boiling water indicated 92° 2′ (198° Fahrt.) now 100°,—92.2=7.8 and 978.5+7.8=7632.3 feet, about 210 more than the trigonometrical elevation.

III. The third method, which ranks next in accuracy to trigonometrical measurement, and is much easier of accomplishment, is by observing the height of the mercurial column in a barometer, at two points, the lowermost being at or near the level of the sea—and by means of a calculation, for which a great variety of formulæ are given, the relative height is deduced. The majority of these give the relative height with great correctness at or about the latitude of 45°—in lower latitudes the result is generally under, and in higher latitudes above the truth. Later observers have applied a great number of corrections to obviate this and similar sources of error, and upon the whole the method may be considered as very accurate. From a series of corresponding observations made in this way by Dr. Dalmahoy and myself, we determined the height of Ootacamund to be 7,416 feet, which only differs by 55 feet from the trigonometrical measurement, and the latter being understood to apply to the level of the lake, while our observations were conducted at my house, at some height above it, the two measurements may be considered as nearly coincident.

In the subjoined table are given the height of a few of the principal points of the hills above the level of the sea; the majority are taken from the survey by Captain Ward, and are marked (T), the others (marked B) from barometrical measurements by Dr. Dalmahoy and myself. The want of a portable instrument has hitherto prevented my ascertaining the height of many other points on the hills—but which defect I hope soon to have it in my power to remedy.

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* Supplement to the Encyclopedia Britannica, Article Barometrical Measurements.

Table of Heights—Dodabet Range.

Dodabetta, (T.)	8760
Davursolabetta, (T.)	8380
Bevoybetta, (T.)	8488
Koondamoya, (T.)	7816
Hokulbetta, (T.)	7267
Tamburbetta, (T.)	7292
Ootacamund, (T.)	7361
Do. (B.)	7416
Coonoor, (B.)	5886
Koondah Range.	
Moorkoortee Peak, (T.)	8402
Koondah Peak, (T.)	8353
Kudiakad, (Saddle-back, Avalanche Hill,) (T.)	8502
Davebetta, (Sugar-loaf Hill,) (T.)	6571
Kotagherry Range.	
Kodanad, (T.)	6815
Koondabetta, (T.)	6555
Oorbetta, (T.)	6915
Kotagherry, (T.)	6571
Dimhutty, (T.)	6330
Low Country, adjoining.	
Meetapollium, (B.)	912
Sreemogah Bungalow*, (B.)	949
Coimbatoor Palace, (B.)	1483
Danaikencottah Fort, (T.)	1066

†Height for 198° B. T. =	7324
Deduct for height of Bar. at sea, in the month of May, 0.300 in.	250
	7074
Temperature, mean of stratum of intervening air—viz. 65° ? = mul.	1,070
Approx. height of Ootacamund,	7574 feet.

No. III.

Meteorological Tables.

Of the subjoined tables, those for 1831 and 1832, are neither so complete nor so accurate as could have been wished, arising partly from the want of instruments, the absence of a properly constructed building for observations, and of definite notions on the subject of meteorology generally.

Towards the close of the year 1832, however, having removed into a house of my own, I was at great pains to construct a proper place for the reception of the instruments, to which also I had received several valuable accessions through the kindness of my late lamented friend Dr. A. T. Christie; who was likewise at great pains to instruct me in the manner of taking the observations, the proper hours, &c. The observations, therefore, for 1833, may be depended upon as perfectly accurate, and are tolerably complete. It appears to be the result of concurring observations by all the most scientific meteorologists, that the hour of 10 A. M. is that at which the thermometer, photometer, &c. attain their mean daily height. I have accordingly assumed observations made at that hour as a basis, (excepting of course the maximum and minimum temperature as indicated by the self-registering thermometer,) partly as presenting the medium state of each instrument, and partly because my professional avocations render it impossible for me to depend on making more than one observation per day.

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* At the foot of the old Kotagherry Pass, now disused.

† Prinsep's formula published in No. 16 of the Journal of the Asiatic Society. The Table of altitudes corresponding with the indications of the Boiling Thermometer are calculated on the supposition of the Barometer standing at 30.000 inches at the level of the sea. The Barometer at Madras in May, stands at 29.676.—(*Journal Asiatic Society*, vol. i. p. 29.) 29.700 is assumed above.

The instruments are suspended on a frame in the centre of a small wooden building, surrounded by venetians, so as to allow of a free circulation of air, but completely isolated and protected from the effects of radiation by a wide thatch roof, projecting about four feet on each side.

The instruments used (unfortunately rather limited in number) are as follows:

1. A very delicate and beautiful standard thermometer, by Troughton and Sims.

2. A small portable ditto, by Robinson.

3. A self-registering maximum thermometer, by Robinson.

4. A self-registering minimum ditto, by Carey.

5. A hygro-thermometer, on the principle of Leslie's hygrometer.

The above have been carefully compared together, and an allowance made for trifling discrepancies.

6. A Leslie's photometer.

7. A Leslie's atmometer, (now unfortunately broken.)

8. A very beautiful and delicate portable mountain barometer, by Carey, on a peculiar principle; notwithstanding an accident it met with in carrying it from one house to another, it appears, from comparison with several other barometers, to be equally sensible and accurate.

9. A Daniel's hygrometer.

10. A pluviometer, made at Madras.

It may be necessary to explain, that the column marked "Hygrometer" indicates, in centesimal degrees, the point to which the hygro-thermometer fell when the bulb was wetted with distilled water. That marked "difference" shows the difference between it and the plain thermometer, also in centesimal degrees. Under the head "quantity of moisture" is found the number of grains weight of water contained in a cubic mass of air, 40 inches every way. Under "dryness," the number of grains weight of water required to saturate a similar cubic mass, and under "dew point," the point of saturation of the same mass by reduction of temperature. The three last columns are determined by calculation from a set of tables furnished by Dr. Christie, and deduced from the experiments of the celebrated Sir J. Leslie.

The observations marked "Æthrioscope," in the last two months, were taken from an instrument adapted to the purpose by Dr. Christie; they are as yet too few in number to be important, but when pursued through successive months, will, I have no doubt, afford some curious results, on the subject of radiation.

METEOROLOGICAL TABLES, KEPT AT OOTACAMUND, ON THE NEILGHERRIES, FOR THE YEARS 1831, 32, AND 33.

Abstract Register of the Weather at Ootacamund, on the Neilgherries, for the year 1831.

Month.	Barometer.			Mean of Thermometer attached to Barometer.	Thermometer in shade.				Rain, square inches.	No. of days.				Prevailing winds.	Remarks.
	Maxim.	Minim.	Mean.		Maxim.	Minim.	Mean.	Greatest daily range.		Rain.	Showers	Cloudy.	Fair.		
				°	°	°	°	°							
March, ..	23,290	23,060	23,175	61	72	44	58	21 66 to 45	none.	..	4	3	24	N. N. E. to N. E.	Weather remarkably clear & fine—sun very powerful from 8 to 10, and from 12 to 2—evenings and mornings clear, cold, and bracing—frost once or twice.
April, ...	23,210	22,960	23,085	63	73	51	62	21 73 to 52	22,33	..	10	3	17	N. N. E. S. E.	Weather milder than in March—some light showers, but very partial—two thunder-storms with very large hail.
May, ...	23,026	22,940	22,983	$64\frac{1}{2}$	70	51	$60\frac{1}{2}$	15 70 to 55	57,45	1	19	..	11	S. W.	Weather threatening—several days of frequent showers—one day very heavy rain—atmosphere close—frequent thunder, and sheet lightning at night.
June, ...	22,940	22,880	22,910	$63\frac{1}{2}$	68	51	$59\frac{1}{2}$	11 66 to 55	38,80	..	11	..	19	S. S. W. S. W.	Monsoon appeared to set in about the 4th, but the weather cleared up, and was very fine during the greater part of the month—temperature very equable.
July, ...	22,900	22,822	22,861	63	65	51	58	10 65 to 54	21,70	1	5	4	21	S. S. W.	Usually a rainy month—this year very fine, having only one day heavy rain—Koondah Hills covered with clouds, upper portion of range clear.
August, ..	22,840	22,800	22,820	61	67	51	59	13 67 to 54	41,02	3	10	..	17	S. S. W.	Disagreeable weather—occasional heavy rain and frequent showers—cold and damp to the feelings.
September,	22,840	22,730	22,785	$60\frac{1}{2}$	60	53	$56\frac{1}{2}$	8 62 to 54	89,60	5	5	10	11	S. E. E. S. W.	Usually a fine month—this year rainy, cold, and uncertain—occasional thunder and much sheet lightning.
October...	23,100	23,012	23,056	60	67	49	58	14 67 to 53	73,00	4	11	..	16	N. E.	Very variable and uncertain weather, consequent on the change of monsoon—heavy rain at Kotagherry, and frequent partial mists here.
November,	23,140	23,000	23,070	$59\frac{1}{2}$	66	46	56	17 63 to 46	74,00	5	3	4	18	N. N. E. E. N. E.	Several days of very heavy and constant rain, but on the whole a very fine month—some thdr.-storms—air keen.
December,	23,220	23,128	23,174	57	63	42	$52\frac{1}{2}$	21 63 to 42	46,	..	2	4	25	N. N. E. E. N. E.	A beautiful month—much fog at the beginning, afterwards clr., cold, and bracing—occasional hoar-frost on the hills.

Mean height of the Barometer	22,991
Ditto ditto Thermometer attached,...........	$61\frac{3}{16}$
Ditto ditto ditto during the day,...........	$67\frac{1}{16}$
Ditto ditto ditto during the night,...........	$48\frac{9}{16}$
Ditto ditto ditto day and night,...........	$57\frac{9}{16}$
Mean daily range,...........	$15\frac{7}{16}$

Quantity of rain fallen, square inches,..........	42,250
No. of days heavy rain,..........	19
—— ditto occasional showers with fair intervals,..	80
—— ditto cloudy,..........	28
—— ditto clear and fine,..........	179

Abstract Register of the Weather at Ootacamund, on the Neilgherries, for the year 1832.

Months.	Barometer corrected to 32° Faht.			Thermometer.				Rain.	No. of days.		Prevailing Winds.	Remarks.
	Maxim.	Minim.	Mean.	Maxim.	Minim.	Mean.	Greatest daily range.	Square inches.	Showers.	Fair.		
					°	°	°					
January,	23,375	23,081	23,228	67	39	53	24	None.	..	31	N. E.	A very fine month, clear, cold, and bracing—frequent hard frost—wind very cold.
February,	23,364	23,084	23,224	69	38	53.5	31	.20	1	28	N. E.	Much the same as the last—hard frost in the valleys at night—wind cold.
March,	23,052	23,006	23,029	70	47	58.5	19	1.48	6	25	N. E.	Milder than the two preceding months—refreshing showers towards the close—sun occasionally hot.
April,	23,066	22,984	23,025	73	53	63	17	2.74	9	21	N. E.	A mild month—occasional showers, but very fine in the intervals.
May,	23,032	22,960	22,996	76	53	64.5	39	4.24	11	20	N.	This month was finer than usual—occasionally hot a few hours, but with fine intervals—vegetation most luxuriant.
June,	22,970	22,836	22,903	73	52	62.5	15	4.18	17	13	S. W.	Monsoon later of setting in—not fairly established till the 19th—weather cool and pleasant.
July,	22,826	..	..	58	52	55	16	7.31	21	9	W.N.W.	Very wet and disagreeable—constant drizzling rain.
August,	22,355	..	..	62	51	56.5	11	1.70	13	18	W.S.W.	*A fine month—some rain towards the end.*
September,	22,807	..	..	64	51	57.5	13	9.92	13	17	W.N.W.	Rainy, blustery, and disagreeable during the first half—fine weather the last part of the month.
October,	...	..	..	....	....	...	......	3.89	....	...	....	Some rain in the early part of the month—the rest cold and dry.
	No	obser	vations	....	....	....	......	......	....	....		
November,											......	No rain during these months—clear, cold, and dry.
December,	....	..	..	....	....	....	......	......	....	....	......	

BAROMETER.	
Mean maximum,	23.038
Mean minimum,	22.991
General mean,	23.014

THERMOMETER.	
Mean maximum,	68
Mean minimum,	48.5
General mean,	58.25
Mean daily range,	18.33

RAIN.	
Square inches,	35.66

NO. OF DAYS REGISTERED.	
Fair,	182
Showery,	91

Daily Atmospherical Register, kept at Ootacamund, for the month of January, 1833.

Days.	Temperature. (Faht.)				Pressure	Light.	Winds.	Moisture.					Rain.			Evaporation.	Remarks.
								10 A. M.									
	Minim.	Maxim.	Mean.	10 A. M.	Barometer corrected, 10 A. M.	Photometer, Leslie's.		Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Night.	Day.	Total.	Atmometer, 24 hours.	
1	43	67	55	61	23.124	..	S.	....	....	......	....	....	..				
2	40	65	52.5	63	.129	..	S.	....	....	......	....	....	..			...	Hazy and showery at intervals.
3	40	68	54	61	.140	..	S. S. E.	....	....	......	....	....	..		1.12		Morning & day clr. and fine—at night rn.
4	40	66	53	61	.129	..	Easterly.										Morning fine—afternoon cloudy.
5	43	65	54	63	.135	..											Dry and fine, with occasional fogs.
6	42	66	54	61	....	..											
7	40	67	53.5	63	.142	..											
8	43	66	54.5	61	.150	..		....	....	......	....	....	..	..	....	......	
9	40	67	53.5	61	.124	..											
10	40	67	53.5	61	.136	..											
11	40	65	52.5	61	.140	..											
12	40	66	53	61	.120	..		....	....	......	....		..	..	....	......	
13	43	67	55	63	.124	118	E. E. S. E.	9	8.2	69.6	151.8	7.9	..	..	....	......	Dry and clear—sun hot, night clear—cold.
14	40	65	52.5	60	.129	115	E. E. N. E.	6	9.2	34	173.6		..	..	....	......	Ditto ditto ditto.
15	40	68	54	61	.176	121	E. E. S. E.	7	9.4	44.2	169.3	....	..	..	....	......	Ditto ditto ditto.
16	40	66	53	61	.163	120	E.	8	8.4	60.7	152.8	10.8	..	..	....	......	Ditto ditto—hard frost in open air.
17	39	65	52	..	....	..	....	....	....	......	....	....	..	..	....	110	Ditto ditto ditto.
18	40	66	53	61	.143	126	E.	8.5	7.6	72	138.4	7	..	..	....	......	Ditto ditto ditto.
19	42	..	..	62	.149	120	E.	9	7.5	76.6	137.8	5.7	..	..	....	......	Ditto ditto ditto.
20	42	65	53.5	..	....	..	E. E. S. E.	....	....	......	....	....	..	..	....	67	Ditto ditto ditto.
21	42	63	53	56	.155	117	E.E.S. E.S.E.		6.1	85.8	108.8	3.4	..	..	....	......	Ditto ditto ditto. [very high wind.
22	41	63	52	56	.143	118	E. S. E.		4.3	106.5	75.8	1.3	..	..	....	......	Dry and clear—afternoon cloudy—night
23	42	64	53	55	.127	112	S. E. E. S. E.	9	3.5	115.6	62.5	3.1	..	..	....	59	Fine clear day—wind high and cold.
24	41	59	50	57	.125	119	N. E. S. S. E.	8	5.5	89	97.6	2.5	..	..	....	59	Mg.& aftrn. fine cl. & cold—evg. str. of wd.
25	43	60	51.5	54	.147	117	S.S.E. E.N.E.	7.7	4.5	97.7	77.9	0.5	..	..	....	42	Do. do. high wind evening and all night.
26	45	61	53	54	.141	120	S. E.	8	4.2	102.7	62.9	0.6	..	..	....	62	Ditto ditto ditto.
27	43	63	53	57	.130	..	....	....	....	......	....	....	..	..	....	68	Ditto ditto ditto.
28	41	65	53	54	.126	..	....	....	....	......	....	....	..	..	....	......	Ditto ditto ditto.
29	42	65	53.5	58	.115	..	....	....	....	......	....	....	..	..	....	......	Ditto wind moderate.
30	41	63	52	61	.112	..	....	....	....	......	....	....	..	..	....	......	Ditto ditto ditto.
31	41	66	53.5	62	.102	118	E. N. E.	9	7.6	75.6	139.8	6.1	..	..	....	......	Ditto ditto ditto.
Monthly													..	..	....	......	Ditto ditto ditto.
means,	41$\frac{8}{31}$	64$\frac{29}{30}$	53$\frac{1}{15}$	59$\frac{21}{25}$	23.134	118.5	....	7.5	....	79.2	119.2	....	Total		.12		

Monthly Observations.

In the beginning of the month there were a few heavy showers (a very unusual occurrence at this season) which had the beneficial effect of stopping the influenza which had prevailed extensively among the native portion of the population during the preceding month, but which was confined to them, not having affected the European residents. The atmosphere then assumed the character usual to it at this season—excessively dry, clear, cold, and bracing—hard frost in the lower valleys and sheltered spots—occasional high winds, chiefly at night. Its effects on the cases under treatment have been highly satisfactory, most of them progressing rapidly towards recovery.

Daily Atmospherical Register for February, 1833.

Days.	Temperature.				Pressure	Light.	Winds.	Moisture.					Rain.			Remarks.
								10 A. M.								
	Minim.	Maxim.	Mean.	10 A. M.	Bar. corrected to 32 Faht. 10 A. M.	Photometer, Leslie's.		Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Night.	Day.	Total	
1	43	66	54.5	60	23.107	110	E. N. E.	10.6	4.9	114.2	90.5	2.8	....	....	....	Fair, clear, & dry—wind not high—nights cold.
2	42	66	54	61	.101	125	E. N. E.	8.8	7.6	72.1	138.3	7.1	....	....	....	
3	41	65	53	61	.095	118	E. E. S. E.	10 5	5.9	103.4	110.1	.7	....	....	....	
4	43	65	54	61	.105	117	E. E. S. E.	12.	4.1	133.8	76.6	6.3	....	....	....	Cloudy,dark, and threatening—wind light—evening cold—fine.
5	43	65	54	59	.109	123	EESE. ENE.	11.6	3.6	134.9	67.	5.5	....	...	....	Day fine—evening ditto—mild.
6	44	67	55.5	61	.069	122	E. E. N. E.	10.5	5.6	116.4	104.	1.4	....	....	....	Ditto ditto—night very clear, cold.
7	44	68	56	62	.083	115	E. E. N. E.	11.	5.9	107.2	101.2	1.5	....	....	....	Ditto ditto ditto ditto.
8	44	68	56	61	.097	120	E. S. E.	9.	7.1	80.6	129.8	4.7	...	....	....	Morng. fine—high wd.—day fine—evg. cl.—not so cold.
9	48	65	56	62	.093	......	ESE. NEN.	....	....	......	....	....	....	....	....	Ditto ditto—evening fine, mild, and clear.
10	44	68	58	62	.093	117	N. E.	8.9	8.	70.9	147.5	7.5	.. .	...	. ..	Ditto sun hot—ditto ditto—rather cold.
11	46	....	...	61	.097	118	....	9.5	6.6	89.1	121.3	.4	....	....	....	Ditto ditto.
12	....	68	....	....	....	......	....	....	....	......	....	....	....	....	....	Ditto ditto.
13	47	67	57	64	.127	122	E. E. S. E.	13.5	7.4	88.4	120.3	.2	....	....	....	Ditto ditto.
14	49	70	59.5	65	.157	......	E. E. N. E.	10,5	7.5	87.4	142.3	0.0	....	....	....	Ditto ditto.
15	49	...	...	66	.157	112	E. E. N. E.	10.	8.8	70.7	167.7	7.5	....	...	....	Ditto ditto.
16	....	70	....	....	....	......	....	....	....	......	....	....	....	....	....	Ditto ditto.
17	48	....	....	63	.087	110	E. N. E.	8.9	8.3	67.9	163.5	8.4	....	....	....	Ditto ditto.
18	....	....	....	....	....	......	....	....	....	......	....	....	....	....	....	Ditto ditto.
19	....	....	....	....	....	......	....	....	....	......	....	....	....	....	....	Morng. fine—sun hot—evg. fine, mild, and rather cold.
20	....	....	....	....	....	......	....	....	....	......	....	....	....	....	....	Ditto ditto.
21	....	....	....	....	....	......	....	....	....	......	....	...	.. .	....	....	Day fine—shower in the evening.
22		....	....	....	....	......	....	....	....	......					....	Ditto rain in the night
23		....	....	....	....	......	....	....	....	......	....	....	....	....	42	Ditto rain during night.
24																
25																
36		No	obse	rvat	ions.											
27																
28																
29																
Monthly means,	45	67	56	62	23.004	117.6	....	9.59	6.01	95.5	121.3	3.88	....	....	42	

Daily Atmospherical Register for March, 1833.

Days.	Temperature.				Pressure.	Light.	Winds.	Moisture.					Rain.			Remarks.
								10 A. M.								
	Minim.	Maxim.	Mean.	10 A. M.	Bar. cor-rec'ed to 32 Faht. 10 A. M.	Photo-meter, Leslie's.		Hygro-meter.	Differ-ence.	Quantity of mois-ture.	Dryness.	Dew point.	Night.	Day.	Total.	
1st	to	6t	h, no	obse	rvation.											
7	..	73	....	....	....	......	....	....	....	......	....	....	..	....	....	
8	53	74	63.5	6	23.169	115	N. E. N. N. E.	9.5	10.7	48.1	206.2	....	..	....	....	Clear and fine—sun hot—wind high and cold.
9	54	74	64.	69	.167	110	E. E. S. E.	9.5	11.4	38.3	219.6	....	..	....	....	Ditto—wind high—evening fine.
10	53	72	62.5	67	.169	112	E. E. S. E.	9.5	9.9	56.1	189.	12.5	..	....	....	Ditto ditto—night cold—high wind.
11	49	74	61.5	....	....	......	E. E. S. E.	....	....	......	...	....	..	....	....	Ditto ditto.
12	50	..	....	70	.171	102	E. E. S. E.	9.	12.1	30.6	234.5	....	..	....	....	Ditto ditto ditto—fresh breeze.
16	..	75	....	....	....	....	....	....	...	......	....	....	..	....	....	
17	50	74	62.	69	....	104	E. E. S. E.	9.5	11 2	43.1	217.2	....	..	....	....	Ditto rather hazy—ditto ditto.
18	48	..	....	....	....	105	N. E.	8.	13.6	8.7	262.7	....	..	....	....	Morning and day very clear.
25	47	75	61.	....	.143	105	E. S. E. S. E.	10 5	10.2	60.4	199.9	10 9	..	....	....	Fine and clear—sun hot—wind high and cold.
26	48	76	62.	70	.199	93	E. S. E.S.E.S.	10.5	10.6	56.4	208.7	12.4	..	....	....	Ditto ditto ditto.
27	49	..	....	71	.125	98	E. S. E. S. E.	10 5	11.1	51.4	220.	14.4	..	....	....	Ditto ditto ditto.
29	..	76	....	....	....	......	....	....	....	......	.. .	....	..	....	....	
30	52	77	64.5	71	.169	102	E. S. E. S. E.	10.5	11.4	48.4	226.7	....	..	....	....	Clear and dry—high wind.
31	56	76	66.	70	.197	......	....	....	....	......	....	....	..	....	....	Ditto ditto.
Monthly means,	50	74	62.	69	23.157	104.6	....	9.6	11.2	44.1	218.4	....	..	....	....	

Daily Atmospherical Register for April, 1833.

Days.	Temperature.				Pressure	Light.	Winds.	Moisture.					Rain.			Remarks.
								10 A. M.								
	Minim.	Maxim.	Mean.	10 A. M.	Br. corrected to 32 Faht. 10 A. M.	Photometer, Leslie's.		Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Night.	Day.	Total.	
1	56	75	65.5	71	23.229	108	E. E. S. E.	10.8	1.8	56.7	214.7	.12	....	.. ..	....	Day slight haze—high wind and dust.
2	56	76	66.	71	.215	110	E. N. E. N.E.	10.5	1.4	48.4	226.7	....	....	....	....	Ditto ditto ditto.
3	46	75	60.5	67	.177	106	E. N. E. N. E.	13.5	5.5	531.6	109.6	5.9	....	....	....	Ditto ditto ditto.
4	....	76	....	....	....	....	....	....	....	.	....	....	....	....	....	Ditto—afternoon cloudy. [of rain.
5	56	74	65.	70	.142	58	E. N. E. N. E.	12.	9,1	83.1	182.	1 1	....	.02	.02	Cloudy, close, and warm—afternoon showers
6	56	76	66.	72	.133	92	N. E.	11.5	10.9	61.1	220.5	10.7	....	....	....	Morning fine—day do. clear, and hot.
7	55	76	65.5	73	.139	100	E. N. E.	10.5	12.	42.4	240.5	....	....	....	....	Day fine—wind high, hot—night clear, cold.
8	53	77	65.	69	.131	107	E. E. N. E.	13.	7.7	105.3	155.	1.2	....	....	....	Morng. fine—do. day—fine. [thun. & lighting
9	50	75	62.5	68	.117	16	E. S. E.	12.	8.3	91.1	164.9	2.	....	.09	.09	Do. calm, close, cloudy—evg. showers—5 P.M.
10	53	....	...	....	....	....	....	....	....	..	....	...	....	.02	.02	Morng. fine, close—5 P. M. light shower.
11	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	
12	....	....	....	....	....	....	....	....	....	..	....	....	....		....	
13	....	....	....	....	....	....	....	....	....	..	....	....	....		1.58	Mornings fine—evening thunder storms, with
14	....	....	....	...	....	....	....	....	....	..	....	....	....			heavy showers.
15	....	73	....	68	.079	116	E. N. E.	13.5	6.2	124.6	124	4.7	....		....	Fine.
16	55	73	64.	67	.081	104	E. N. E.	15.	7.4	104.1	14.1	0.9	....	....	....	Ditto. [rain all night.
17	54	70	62.	68	.071	100	E. N. E. N.E.	15.	4.6	154.	93.4	9.3	....	.30	.30	Mrg. fine—afternoon heavy thdr. storm—
18	54	71	62.5	67	.089	61	E. N. E.	13.	6.	122.3	118.3	3.4	.40	....	.40	Do. cloudy, but fine—evening do. [& lightg.
19	58	72	65.	68	.085	57	E. N. E.	12.	8.2	92.1	162.2	1.8	....	.67	.67	Do. close, cdy—1 P.M. hvy. storm. of rn, thdr.
20	52	68	60.	63	.057	17	E. N. E. N. E.	14.5	2.7	168.5	52.9	11.3	.14	....	.14	Do fine, cloudy—day threatening, but fine.
21	52	72	62.	66	.063	98	E. S. E. E.	14.	4.5	146.	39.1	8.2	....	....	....	Do. do. clear—high wind.
22	48	69	58.5	...	....	98	E.	....	....	..	....	....	....	....	....	Day fine—4 P. M. cloudy—evening fine.
23	51	72	61.1	67	.079	70	E. N. E.	15.5	3.9	165.7	79.4	10.9	...	..	....	Morg. fine—lt. haze—evg. thdr. storm Orn.
24	53	72	62.5	68	.075	70	E N.E.E.S.E.	....	....	..	....	....	...		.40	Do. evening thunder storm and rain.
25	53	72	52.5	68	.053	....	E. E. S. E.	15.	4.4	156.	89.1	9.7	....			Morning fine, hazy.
26	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	Fine.
27	....	....	...	....	....	....	....	....	....	..	....	....	....	....	....	Ditto.
28	....	....	....	....	....	....	....	....	....	..	....	....	....	....	.48	Heavy thunder storm 2 P. M.
29	....	72	.. ..	....	....	....	....	....	....	..	....	.. .	....	....	....	Clear and fine, cold.
30	56	74	65.	65	.073	....	E. E. S. E.	....	...	..	....	....	....	..	....	Do. high wind.
Monthly means,	53	73	63.	68	23.109	82.66	....	12.67	7.2	108.4	144.7	6.5	....	....	4.10	

Monthly Observations.

The weather during this month was generally fine and pleasant; several thunder storms occurred, as is usual at this season, and had the effect of rendering the atmosphere milder and clearer: the effects of the unusual quantity of electricity on delicate invalids was less marked than in former years, and the improvement in the health of all the convalescents now residing here has been uniform and decided. A good deal of fever occurred among the natives employed on the Ghats, generally however in a very mild and manageable form. No cases of fever occurred among the Europeans attached to them.

Daily Atmospherical Register for May, 1833.

Days.	Temperature.				Pressure	Light.	Winds.	Moisture.					Rain.			Daily Observations.
								10 A. M.								
	Minim.	Maxim.	Mean.	10 A. M.	Br. corrected to 32 Faht. 10 A. M.	Photo-meter. Leslie's		Hygro-meter.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Night.	Day.	Total.	
1	57	75	66.	69	23,083	78	E. ESE.	12.8	7.7	103.6	154.3	0.7	....	....	....	Morn. fine, slight haze, day fine, high wind.
2	54	....	....	70	,073	94	DO.	13.	8.3	99.3	168.3	0.2	....	....	...	Do. clear, day fine, cloudy occasionally.
3	....	76	....	....	....	....	DO.	....	....	..	....	....	.54	....	.54	Do. hot & cls. 4 P.M. hvy. thr. stm. even. fine.
4	53	73	63.	69	,043	97	DO.	15.5	5.	154.7	103.4	9.4	.48	.46	.94	Do. fine, clear, high wind, 4 P.M. thr. storm.
5	56	70	63.	69	,025	73	EE. SEE.	16.8	3.7	180.4	77.5	12.8	....	....	....	Hvy. thr.stm. & rn. durg.nt. morn. & day fine.
6	52	70	61.	....	....	....	....	....	....	..	....	....	....	.45	.45	Morn. fine, 3 P.M. hvy. thr. sh. even. driz.
7	52	71	61.5	68	,035	85	SE. SES. E.	14.5	5.5	140.5	111.5	7.3	....	....	...	Do. clear, day fine, evening beautiful.
8	53	72	62.5	67	,057	90	S. ESES.	13.8	5.6	133.3	11[illegible].8	6.2	....	.42	.42	Do. do. cool, wind high, 3 P.M. thr. storm.
9	56	72	64.	68	,071	100	SE. ESE.	13.8	6.2	127.3	124.7	5.2	....	....	....	Morning and day fine, cool wind.
10	53	71	62.	67	,065	50	E. ESE.	13.8	5.2	137.3	103.3	6.9	....	....	....	Morn. fine, hazy, even. cldy. thr. & ltning.
11	57	72	64.5	....	....	....	ENE.	13.	7.8	104.3	157.2	0.9	....	....	....	Do. hazy, close, day very fine.
12	50	71	60.5	68	,041	98	DO.	15.	5.	150.	1[illegible]2.	8.8	.30	...	.30	Do. fine, day do. cldy. nt. rn. thr. & ltning.
13	57	72	64.5	67	,041	82	DO.	16.3	3.1	181.5	63.6	12.9	....	.08	.08	Do. hazy, 10 P.M. cl. & fine, 5 P.M. showers.
14	56	73	64.5	68	,025	68	E. SE.	16.7	3.3	183.4	68.6	13.1	.32	....	.32	Do. fine, cls. & wm. 5 P.M. rn. all night.
15	55	70	62.5	67	,015	64	ESE. N. NNW.	16.4	2.0	187.5	53.1	13.6	....	....	....	Do. hazy, close, evening lightning, cloudy.
16	55	68	61.5	61	22,985	32	N. NNW.	15.	1.4	186.	27.5	13.5	.63	....	.63	Do. cloudy, close, 6 P.M. rain, all night.
17	55	66	60.5	62	,986	20	E. ESE. NW.	14.3	2.6	167.7	50.7	11.2	....	2.30	2.30	Do. do. hvy. 11 A.M. very hvy. rn. till 4 P.M.
18	50	68	59.	63	,935	100	EN. NNW.	15.5	1.7	187.7	33.7	13.6	.03	....	.03	Do. clear, fine, hot, 2 P.M. showers.
19	54	67	60.5	64	,913	29	DO.	15.	2.7	173.	53.6	11.9	....	....	....	Do. cldy. cls. aftern. fair, cldy. even. driz.
20	53	69	61.	67	,959	25	WNW.	12.8	3.8	142.6	72.8	7.6	....	....	....	Do. fair, high cold wind, aftern. cldy. driz.
21	51	68	59.5	59	,963	27	NW. WNW.	13.6	1.1	176.5	20.8	12.3	....	....	....	Do. cldy. cold, driz. aftern. fair, nt. ltning.
22	56	69	62.5	68	23,015	80	N. NNW.	14.5	5.2	143.5	105.1	7.8	....	....	....	Do. fine, clear sunshine, even. fair, cloudy.
23	53	75	64.	68	,025	90	NNW.	16.	4.0	169.5	82.5	11.4	....	....	....	Do. do. hot sunshine, evening fine.
24	52	71	61.5	69	,009	103	DO.	16.	4.5	164.5	93.4	10.8	....	....	....	Do. do. do. aftern. partial showers.
25	51	69	60.	66	22,997	85	DO.	15.5	3.3	171.5	66.7	11.7	....	.37	.37	Do. fine hot, 2 P.M. small show. even. fine.
26	54	68	61.	67	23,029	90	DO.	15.5	3.5	169.7	70.9	11.4	...	.10	10	Do. do. 5 P. M. light drizzling rain.
27	55	68	61.5	66	,035	53	DO.	15.5	3.0	174.7	60.4	12.0	....	....	....	Do. & day fine, even. do. high wind.
28	54	....	....	64	,025	82	NN. WWW.	15.5	2.0	184.7	39.8	13.2	....	....	....	Do. light haze, afternoon fine.
29	....	70	....	...	....	....	....	....	....	..	....	....	. ..	.45	.45	Do. do. 3 P.M. sm. sh. & driz. night fine.
30	52	66	59.	65	,025	54	WNW.	15.0	3.0	170.	59.7	11.5	....	.21	.21	Do. very fine, 4 P.M. showers, even. fine.
31	50	69	59.5	....	....	....	....	....	....	..	....	....	....	...	....	Do. do. day lowering, no rain.
Monthly mean,	$53\frac{27}{25}$	7[illegible]$\frac{20}{29}$	61.5	$66\frac{5}{13}$	23,018	72.26	....	....	...	157.	82.	....	....	....	7.14	

Monthly Observations.

The weather during this month has been warm and pleasant, frequent heavy falls of rain have occurred, but without much thunder and lightning. The monsoon appeared to have set in about the 25th, the rain generally falling in the afternoon, in this as in other respects following the usual course of the seasons on the Hills, and it has never occurred so as to prevent exercise being taken in the open air during some part of the day. The cases under treatment continue to improve, in a few instances the moisture of the atmosphere has produced a slight tendency to bowel complaint, and there have been two cases of determination of blood to the head attended with symptomatic fever. The Natives as usual at this season have suffered pretty extensively from slight fever and bowel complaint, but with the exception of some cases of Jungle fever contracted in the Goodaloor Jungle the symptoms were mild and tractable.

Daily Atmospherical Register for June, 1833.

Days.	Temperature.				Pressure	Light.	Winds.	Moisture.					Rain.			Daily Observations.
								10 A. M.								
	Minim.	Maxim.	Mean.	10 A. M.	Bar. corrected to 32 Faht. 10 A. M.	Photometer, Leslie's.		Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Night.	Day.	Total.	
1	48	....	....	66	23.013	92	WNW.	14.	4.	143.	95.4	7.7	....	..	....	Morning fine, heavy rain afternoon.
2	..													..		
3	..	No	obse	rvat	ions.									..	1.25	Morning fine. Afternoon showers. Night clear and fine.
4	..													..		
5	..	68	....	....	....	..	....	....	....	......	....	....	....	....	....	
6	54	64	59	63	....	..	SSE. S.	....	....	......	....	....	....	....	....	Morn. & day fine but cloudy, even. do.
7	52	..	..	63	....	28	NNW. WSW.	15.	2.2	178.	43.4	12.5	....	.05	.05	Do. dark, lowrg. Noon light driz. even. fine.
8	54	68	61	67	....	82	S. SSE. ENE.	16.	3.1	178.5	63.2	12.5	....	.16	.16	Do. cl. & fine, 4 P.M. shower, night lt. rn.
9	54	69	61.5	66	.029	84	N. NE.	17.	1.6	203.4	32.8	15.4	....	1.00	1.00	Do. do. 9 P. M. hvy. thr. storm, rn. & hail.
10	54	68	61	63	.043	75	N. NNW.	15.5	1.7	187.7	30.7	13.6	.50	....	.50	Do. fine, cls. & cldy. evg. sh. thr. & ltg. all nt.
11	55	68	61.5	67	.033	20	DO.	15.5	3.6	168.7	73.	11.3	....	....	....	Do. do. do. aftern. cloudy, foggy, no rain.
12	52	68	60	67	.037	88	S. SSW.	15.	4.1	159.	82.7	10.1	....	....	....	Do. do. day cldy. no rn., cool and pleasant.
13	52	70	61	70	.035	82	DO.	15.	6.1	139.	126.1	7.2	....	....	.25	Do. cl. fine, day fine, evening fine, cold.
14	50	68	59	66	.053	92	DO.	16.	2.8	181.5	36.9	12.9	....	.62	.62	Do. do. hot, 12 noon thunder storm.
15	52	68	60	68	.051	47	NNW. WNN.	15.5	4.2	162.7	95.9	10.5	....	....	....	Day fine, threatening.
16	53	69	61	65	.027	70	NNW.	14.	4.3	145.0	84.9	8.5	....	....	....	Do. evening threatening.
17	54	68	72	59	.021	96	DO.	13.	1.7	165.3	32.0	10.9	.25	..	.25	Morning fine, 3 P.M. driz. rain, night do.
18	54	63	58.5	63	22.993	25	W. NW.	14.	1.8	173.0	34.6	11.9	.03	....	.03	Dark cldy. cold, driz., lt. rn. occasionally.
19	52	64	58	62	23.005	46	DO.	15.	1.9	181.0	33.4	12.9	.03	....	.03	Ditto ditto.
20	54	65	59	59	22.991	75	WNW.	14.	1.0	181.0	19.0	12.9	.05	....	.05	Morn. occasional sunshine, aftn. driz. & fog.
21	54	69	56.5	56	.995	20	DO.	12.	1.0	164.1	18.2	10.7	.25	....	.25	Do. driz. rn. high wd. occasional showers.
22	52	..	..	..	.997	8	DO.	..	..	..	..	..	....	....	....	Do. cold, dark; drizzling, day and even. fine.
23	..	59	..	62	....	..	DO.	14.	1.	181.	19.	12.9	.20	....	.20	Drizzling rain and fog all day.
24	53	59	56	59	.973	25	DO.	14.5	0.5	190.5	9.5	13.9	.08	....	.08	Morning ditto, day ditto.
25	54	63	58.5	59	.967	67	DO.	13.8	1.2	177.3	23.0	15.3	....	....	....	Do. do. occasional glimpse of the sun, no rain, fog.
26	52	65	58.5	64	.979	36	DO.	12.7	4.8	131.8	92.7	5.9	....	....	....	Ditto ditto.
27	51	70	60.5	65	.991	80	DO.	14.7	3.3	164.3	65.4	10.7	....	....	....	Do. fine, clear sunshine, day fine, hot sun.
28	50	66	58	66	.023	102	DO.	15.	3.6	164.0	72.2	10.7	....	....	....	Do. clear sun, day light showers, even. do.
29	49	69	59	66	.016	99	WNW. SSE.	15.	3.8	162.0	76.4	10.0	.19	....	.19	Do. do. 1 P.M. rain, evening fine.
30	50	69	59	..	23.071	98	DO.	..	..	......	....	....	.07	....	.07	Do. do. 2 P.M. light showers, evening fine.
Monthly mean,	$50\frac{14}{23}$	$66\frac{8}{24}$	58	$63\frac{10}{23}$	23.015	64.04	....	15.2	2.2	167.2	57.8	....	....	....	4.23	

Monthly Observations.

The weather during this month has been exceedingly mild and pleasant. The monsoon having been scarcely felt. The mornings and evenings have been almost uniformly clear and fine so as to admit of taking exercise. All the cases under treatment continue to improve. One or two isolated cases resembling Cholera have been noticed here and at Kotagherry, but the disease has not shewn the slightest tendency to become Epidemic.

Daily Atmospherical Register for July, 1833.

	Temperature.				Pressure	Light.		Moisture.					Rain.	
								10 A. M.						
Days.	Minim.	Maxim.	Mean.	10 A. M.	Bar. corrected to 32 Faht 10 A. M.	Photometer, Leslie's.	Winds.	Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Square Inches.	Daily Observations.
1	50.5	69.5	60	66.5	22.992	97	NNW.	15	3.8	162	76.4	10.5	06	Morning fine, sunshine, day cloudy, light showers.
2	50	68 5	59.2	67	23.002	98	DO.	15	4.4	156	81.9	9.7	60	Ditto ditto, 2 P.M. heavy rain.
3	50	68	59	63	.010	95	SSW.	15	2.2	178	43.4	12.5	..	Morning cloudy, light drizzle, day ditto.
4	50.5	67	58.7	65	.004	42	NNW.	15	3.3	167	65.9	11.1	02	Ditto fine and cool, day fine.
5	52	66	59	65	.004	57	DO.	15	3.3	167	65.9	11.1	25	Ditto ditto, evening drizzling, night rain.
6	55	67.5	61.2	61	.003	4	SSW.	13.8	2.3	166.3	44.1	11.0	17	Do. do. lt. sh. day & even. hvy. fog, lt. sh. all nt.
7	53.5	61	57	55.5	22.989	16	W. SSW.	11.6	1.1	159.9	19.9	10.1	47	Do. threatg. lt. flyg. rn. high wd. day & evg. same.
8	53.5	69	56	59.5	.998	29	WNW.	13.8	1.2	177.3	22.7	12.4	52	Do. do., do. do. occasional sunshine.
9	53.5	61.5	57.5	57.5	.920	22	DO.	13.3	0.5	179.9	9.4	12.7	27	Ditto ditto ditto.
10	54	60	57	58.5	.908	..	DO.	18.8	....	......	....	..	16	Morn. cldy. 10 A.M. clearg. up, day cldy. lt. driz.
11	54.5	61	57.7	60.5	.900	64	DO.	14.4	1.1	183.6	21.1	13.1	12	Ditto ditto ditto.
12	55	61.5	58.2	58	.907	32	DO.	12.7	1.7	162.8	31.8	10.5	01	Morning clear, light drizzle, wind high and cold.
13	54	61.5	57.7	61	.915	61	DO.	13.8	2.3	166.3	44.1	11.0	..	Ditto fine sunshine, high wind, night very cold.
14	51	63.5	57.2	60.5	.922	90	SWW.	12.7	2.8	151.8	52.9	9.0	..	Ditto ditto, day fine, evening clear, cold.
15	53	63	56	62.0	.913	82	NNW.	15	1.6	184	31.4	13.2	..	Ditto ditto ditto.
16	54.5	64	59.2	58.5	.808	13	W.	13.8	0.6	183.3	11.3	13.1	19	Ditto cloudy, light drizzle, night rain.
17	54	63	58.5	58.5	.948	32	W.	13.8	0.6	183.3	11.3	13.1	24	Ditto hazy, day ditto, night rain.
18	54	61.5	57.7	61	23.000	40	W. NNW.	13.8	2.3	166.3	44.1	11.0	12	Ditto misty, evening drizzle, night rain.
19	55	61	58	58.5	.000	16	W.	14.4	....	......	....	[illegible]	20	Morning misty, drizzling, night rain.
20	55	63	59	60.5	22.998	22	W.	14.4	1.1	183.6	21.1	13.1	02	Ditto heavy fog, day fine, evening light drizzle.
21	53.5	62.5	58	60.5	23.000	41	WNW.	13.8	1.7	172.3	130.8	11.8	11	Fair & fine, day ditto, evening drizzle, night cold.
22	53	64.5	58.7	61	.000	51	DO.	13.8	2.3	166.3	44.1	11.0	04	Ditto ditto ditto.
23	52 5	64.5	58.5	60	.005	92	DO.	13.8	1.7	172.3	130.8	11.3	..	Morning very fine, cool day, and evening ditto.
24	53	63.5	58.2	63.5	22.999	80	DO.	12.7	4.5	134.8	86.6	6.4	..	Ditto clear and fine, ditto ditto.
25	53	65	59	66.5	23.006	83	DO.	13.3	2.2	162.9	41.8	10.5	..	Ditto ditto, ditto ditto, night very cold.
26	54.5	64.5	59.5	61.5	.008	93	W.	13.8	2.3	166.3	35.1	11.0	..	Morn. foggy, occasional sunsh. day fine, night cold.
27	55	62	58.5	62.5	.020	100	W.	15.0	1.6	184.0	31.4	13.2	..	Ditto fine, day and evening ditto.
28	54	64	59	61	.027	72	W.	12.3	3.8	138.5	71.9	7.1	..	Ditto ditto, ditto.
29	55	65.5	60.2	61.5	.034	95	W.	13.8	3.9	150	76.3	8.8	16	Ditto ditto, evening rain.
30	52.5	67.5	60	65	.065	94	W.	13.3	5.0	134.9	98.0	6.4	..	Ditto ditto, evening misty.
31	53	68.5	60.7	62.5	.060	93	W.	18.8	....	......	....	..	..	Morning cloudy, fine day, and evening fine.
Monthly mean,	53.2	64.3	58.7	758.2	22.944	53.57	....	14	2.1	150.3	49.7	....	3.73	

Monthly Observations.

The weather during this month has been unusually dry and pleasant; there has been some foggy weather and drizzling rain, but scarcely ever to the extent of preventing exercise; all the cases under treatment, whether European or Native, have continued to improve.

Daily Atmospherical Register for August, 1833.

Days.	Temperature.				Pressure	Radiation.		Light.	Winds.	Moisture. 10 A. M.					Rain.	Daily Observations.
	Minim.	Maxim.	Mean.	10 A. M.	Bar. corrected to 32 Faht. 10 A. M.	Athrioscope.	Difference.	Photometer Leslie's.		Hygrometer.	Difference	Quantity moisture.	Dryness.	Dew point.	Square Inches.	
1	52	67	59.5	63.5	23.012	....	....	83	W.	12.2	5.0	125.6	95.8	4.9	......	Day fine, evening ditto.
2	50	66.5	58.2	65.5	.068	....	....	86	W.	13.8	4.5	144.3	88.6	7.9	......	Ditto ditto.
3	54	69	61.5	65	.059	....	....	80	W.	15	3.3	167.0	65.9	11.1	......	Ditto, evening mist.
4	50	70	60	64.7	.050	....	....	83	W.	13.3	4.4	140.9	85.7	7.4	......	Morning very fine, day and evening ditto.
5	48	69	58.5	65.5	.060	....	....	90	W.	12.7	5.6	123.8	109.1	5.4	......	Ditto ditto, night very cold.
6	46.5	68	57.2	65.5	.098	....	....	83	W.	10.5	7.8	84.4	148.5	3.7	......	Ditto ditto high wind.
7	48.5	68.5	58.5	65.5	.118	....	....	90	NNW.	11.1	7.2	95.0	13[illegible].9	1.1	......	Ditto ditto.
8	49	68.5	58.7	65	.107	....	....	88	WNW.	11.6	6.7	103.9	129.0	0.8	......	Ditto ditto.
9	47.5	70	58.7	66	.137	....	....	84	DO.	9.4	9.4	60.4	178.0	10.9	......	Ditto ditto.
10	45.5	70	58.7	68.5	.172	....	....	85	DO.	13.8	6.2	127.3	124.7	5.2	......	Ditto ditto.
11	50	73.5	56.7	65.5	.162	....	....	77	DO.	13.8	4.5	144.3	88.6	7.9	......	Ditto ditto.
12	53.5	69	61.2	66	.085	....	....	22	W.	13.8	5.0	139.3	99.1	7.2	......	Morning foggy, aftern. and even. partial drizzle.
13	53	70	61.2	63	.039	....	....	57	WSW.	14.4	2.8	166.6	54.8	11.0	.17	Ditto fine, afternoon showers.
14	54	70	62	64.5	.036	....	....	47	W.	15.5	2.2	182.7	43.9	13.0	.83	Ditto, 11 A. M. showers continuing all night.
15	52	65	58.5	63	.043	....	....	30	S.	14.4	2.8	166.3	54.8	11.0	.58	Mg. cldy., cls.&wm. 12 A.M. dense rolg. afn. sh.
16	54	65	59.5	65.5	.040	....	....	61	WSW.	15.5	2.8	176.7	56.2	12.3	.04	Morn. fine, close, afternoon drizzle.
17	52	68	60	65	.031	....	....	10.3	W.	14.4	3.9	155.6	77.3	9.6	1.70	Do. warm, noon heavy & contd. sh. even. fine.
18	51.5	68	59.7	61	.027	....	....	15	W.	14.4	1.7	177.6	32.8	12 4	......	Do. cloudy, cool, day and evening fine.
19	51.5	65.5	58.5	60.7	.032	19.5	4.0	50	W.	12.2	3.3	142.6	62.1	7.7	......	Do. beautiful, cool, day and evening ditto.
20	52	65	58.5	62.5	.036	20.5	3.9	57	NNW.	13.8	2.8	161.3	54.1	10.4	......	Morn. beautiful, cool, clear, day and even. do.
21	52.5	65	58.7	59.5	.028	19.7	4.7	75	DO.	13.8	1.2	177.3	22.7	12.4	.33	Ditto ditto, evening rain till night.
22	51	65	58	58	.009	22.5	8.1	42	W.	12.2	2.2	153.6	41.0	9.3	......	Do. clear, very cold, day fair, even. heavy fog.
23	52.5	65	59	62.5	.000	22	5.4	40	W.	13.8	2.8	161.3	54.1	10.4	......	Do. hazy, day and evening fine.
24	52	67	59.7	60.5	.006	19	3.5	50	W.	13.8	1.7	172.3	32.4	11.8	......	Do. do. fine, do. do.
25	54	65.5	59.7	58	22.999	....	....	28	W.	12.7	1.7	162.8	31.8	10.5	.15	Do. cldy. driving mist, aftn. drizzle, even. shs.
26	53	61	57	58	.975	16.2	1.8	......	SSW.	13.3	1.1	173.9	20.7	11.9	.08	Do. do. occl. parti. sh. day & even. do. nt. very cld.
27	53	62.5	57.7	56	.963	19	5.7	05	W.	12.7	.6	173.8	11.1	11.9	......	Do do. high wind, day and even. drizzle.
28	53	61	57	59.5	.966	16	1.	......	W.	13.8	1.2	177.3	22.7	12.4	.09	Do. do. day and even. fine, nt. cld. brt. mn. lt.
29	53.5	63.5	58.2	61.5	23.014	21.5	5.4	80	W.	13.8	2.3	166.3	44.1	11.0	.09	Do. cloudy, fine, day and even. do.
30	54	63.5	58.7	61.5	.014	21.5	5.4	80	W.	13.8	2.3	166.3	44.1	11.0	......	Do. fair day, and even. do. bright moon, light.
31	53	63	58	62	.017	17.0	.4	96	W.	13.8	2.8	161.3	54.1	10.4	......	Ditto ditto ditto.
Monthly mean,	51.1	66.7	58.65	62.7	23.045	....	....	65.06	....	13.3	3.6	149.	69.8	8.8	4.06	

Monthly Observations.

The weather during this month has been unusually fine, and with the exception of one heavy shower, but little rain has fallen. In the latter part of the month there was a good deal of fog and light drizzling rain. *The cases under treatment continue to improve.*

Daily Atmospherical Register for September, 1833.

Days.	Temperature.				Pressure.	Radiation.		Light.	Winds.	Moisture. 10 A. M.					Rn.	Daily Observations.
	Minim.	Maxim.	Mean.	10 A. M.	Br. corrected to 32 Faht. 10 A. M.	Athrioscope.	Difference.	Photometer, Leslie's.		Hygrometer.	Difference.	Quantity of moisture.	Dryness.	Dew point.	Total.	
1	54	66	60.	65.5	23,006	22.4	6.9	33	W.	13.3	2.2	162.9	41.8	10.4	....	Morng. cl. cld. high wind day and night do.
2	53	64	58.5	59.5	22,994	17.5	2.7	36	W.	13.8	1.2	177.3	22.7	12.4	.9	Do. hazy lt. driz. day fine, eve. part. show.
3	54	66	60.	60.5	,994	20.2	4.7	85	W.	13.8	1.7	172.3	32.4	11.8	....	Do. do. day and evening fine.
4	53	66	59.5	63.5	,996	20.5	3.3	50	W.	14.4	2.8	166.6	54.8	11 0	....	Morning fine. do. do.
5	54	66.5	60.25	65.	23,003	22.	3.7	75	W.	13.8	4.5	144.3	88.6	7.9	.10	Do. aftern. part. show. eve. cldy. thunder.
6	51.5	69.5	60.5	63.	22,997	22.5	5.3	28	W.	13.3	3.9	145.9	75.5	8.2	....	Do. hot day & eve. do. part. driz. nt. hy. wd.
7	53	65.5	59.25	62.5	,972	21.	4.4	87	W. S S W.	13.8	2.8	161.3	54.1	10.4	...	Do. high wd. day fine, eve. part. rn. ltn. th.
8	52	65	58.5	62.	,949	..	..	103	W.	14.4	2.2	172.6	42.8	11.8	.6	Morng. fine, hot sun, day & eve. do. lt. driz.
9	52	69.5	60.75	64.5	,949	22.3	4.6	18	W.	14.4	3.3	161.6	65.0	10.4	....	Do. close cldy. hot sun, day & eve. fine. [nt.
10	51	69	60.	68.5	,984	21.3	1.3	23	W.	15.5	4.5	159.7	92.3	10.1	.68	Do. do. dk. fg. 11 A.M. vy. hy. sh. afn. sh. all
11	56	68	62.	63.	,999	..	..	..	W.	15.5	1.7	187.7	33.7	13.6	.13	Do. do. dz. 11 A.M. sh. afn. & nt. rn. ltg. & th.
12	56	67.5	61.75	64.5	23,004	21.	3.3	66	S. S E.	15.5	2.2	182.7	43.9	13.0	.11	Mg. cldy. close, aftern. show. eve. drk. cldy.
13	52.5	68.5	60.5	64.	22,981	20.3	2.6	100	DO.	15.5	2.2	182.7	43.9	13.0	.10	Do. fine, cldy. aftern. show. eve. fine.
14	54	65	59.5	64.	,973	21.	3.3	110	W.	15.5	2.2	182.7	43.9	13.0	.86	Do. do. nn. vy. hvy. rn. contg. occa. till nt.
15	53.5	67	60.25	60.	,973	..	..	..	S. E.	14.4	1.1	183.6	21.1	13.1	.35	Do. drizzling, noon shower.
16	54	65.5	59.75	60.5	,972	..	..	27	S. S. E.	15.	0.5	195.0	9.7	14.5	.28	Do. fine cldy. nn. lt. sh. eve. & night driz.
17	53	64.5	58.75	63.	,971	23.3	6.1	8	W.	15.5	1.7	187.7	33.7	13.6	.27	Do. cldy. driz. noon do. do.
18	56.5	66	61.25	59.5	,972	..	..	..	S. W.	14.4	0.6	188.6	11.4	13.7	.28	Do. do. do. do. do.
19	56	67	61.25	58.5	,962	19.1	4.7	15	DO.	13.8	0.6	183.3	11.3	13.7	.34	Do. cldy. fine afternoon and night small rn.
20	56	67	61.25	61.	23,007	21.3	5.2	45	W.	13.8	2.3	166.3	44.1	11.0	.3	Mrng. cl. fine, aftern. cldy. driz. eve. fine.
21	55.5	62.5	59.	62.	,005	25.2	8.6	95	W.	15.	1.6	184.0	31.4	13.2	....	Do. do. sunshine aftern. and eve. driz.
22	55	65.5	60.25	60.	22,987	..	..	30	W.	13.8	1.7	172.3	32.4	11.8	.1	Do. do. part. driz. day fine, eve. fog. & driz.
23	54.5	65	59.75	57.5	,998	20.6	6.8	25	W.	13.3	0.5	179.9	9.4	12.7	.7	Do. hzy. but fine, cd. occl. driz. day & eve. do.
24	54	59	56.5	58.	,989	..	..	00	S. W. W.	13.3	1.1	173.9	20.7	11.9	.02	Do. hy. fgy. h. cd. w. d. & eve. do. nt. cl. mn. lt.
25	52.5	59.5	56.	57.	,995	18.	4.2	40	DO.	12.7	1.1	168.8	20.5	11.3	.04	Do. fgy. lt. dz. day do but fine, eve. do. nt. cd.
26	54	61.5	57.75	60.	23,001	23.2	7.7	45	N. N. W.	12.7	2.8	151.8	52.9	9.0	....	Do. fine, day & eve. do. nt. hvy. fog. [mn. lt.
27	53	62.5	57.75	62.	22,997	23.1	6.5	58	W. S. S. W.	14.4	2.2	172.6	42.8	11.8	....	Do. cl. fi. bt. ssh. hh. cd. w. d. & ev. fi. nt. btl. bt.
28	53	64.5	58.75	61.	,982	18.	1.9	150	N. W. W. N. E.	13.8	2.3	166.3	44.1	11.0	....	Mg. cl. fine, hh wd. day & eve. do. nt. cdy. cd.
29	51	65.5	58.25	64.	,987	17.4	..	100	N. W. W.	14.4	3.3	161.6	65.0	10.4	.04	Do. do. do. even. light driz. foggy.
30	54	66	60	64.	23,009	19.5	1.8	82	S. N. W.	13.8	3.9	150.3	76.3	8.8	....	Do. very fine.
Monthly mean,	5361	6548	59.95	61.78	22,986	..	..	15.35		14.22	2.15	169.87	42.07	11.61	3.98	

Monthly Observations.

The weather during part of this Month (usually fine) has been foggy, damp, and accompanied with drizzling rain, the consequence probably of the continuance of the Monsoon on the Coast.—The roads however suffered but little, and exercise was consequently not often interrupted; at the end of the month it cleared up suddenly about the change of moon, and is likely to continue fine.—The cases under treatment all continue to improve.

Average Fall of Rain on the Neilgherries, for four years.

	1829.	30.	31.	32.	33.	Mean.
	Quantity of Rain.	Quantity of Rain.	Quantity of Rain.	Quantity of Rain.	Quantity of Rain.	Quantity of Rain.
Months.	Inches & 100dth parts.	Inches & 100dth parts.	Inches & 100dth parts.	Inches & 100dth parts.	Inches & 100dth parts.	Inches & 100dth parts.
January, ...	..	..	..	..	..	..
February, ...	..	.35	1.53	..	..	.47
March,..........	..	1.14	1.17	1.78	..	1.02
April, ...	..	5.73	3.46	2.24	4.62	4.00
May, ...	..	8.88	4.50	5.02	7.62	6 50
June,.	9.88	8.25	3.44	4.41	..	6.50
July,......... ...	5.34	5.05	1.69	5.01	..	4.27
August, ...	6.11	4.78	3.82	1.31	..	4.00
September, ...	4.21	1.29	10.32	9.62	..	6.36
October, ...	10.77	17.45	6.98	3.89	..	6.51
November, ...	1.64	2.76	9.15	.53	..	3.52
December, ...	4.73	2.72	.49	..	..	1.73
Annual means, ...	42.68	58.40	46.56	33.84	12.24	44.88

Atmospherical Register kept at Kotagherry, for January, 1833.

Days.	Temperature. Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	Daily Observations
1	56	59	58	57	55	56	Foggy morning, heavy showers during the day.
2	49	59	54	56	54	55	Misty morning, fine afternoon.
3	52	62	58	61	55	58	Fine day.
4	50	65	58	60	51	58	Ditto.
5	50	70	60	65	52	59	Fine, clear day.
6	48	69	59	63	52	58	Ditto.
7	49	66	58	58	53	56	Ditto.
8	46	68	58	60	51	56	Ditto.
9	46	67	57	63	51	57	Ditto.
10	46	68	57	61	51	56	Ditto.
11	47	69	59	60	50	55	Ditto.
12	49	72	61	65	50	58	Ditto.
13	47	69	59	63	50	57	Ditto, frost in the valleys this morning.
14	47	68	58	61	50	56	Ditto, ditto.
15	48	71	59	61	50	56	Ditto, ditto.
16	48	72	60	60	51	56	Ditto, ditto.
17	48	72	60	60	51	56	Ditto, ditto.
18	48	71	59	63	51	58	Ditto, ditto.
19	49	72	60	60	50	55	Ditto, ditto.
20	49	68	59	62	52	57	Ditto, ditto.
21	48	70	59	61	52	57	High wind and cloudy.
22	48	70	59	57	50	53	Cold windy morning.
23	47	65	56	52	52	52	Ditto, ditto.
24	43	69	56	52	52	52	Ditto, ditto.
25	34	67	56	60	52	56	Clear cold day.
26	47	68	58	56	50	53	Clear day, very high wind.
27	47	70	59	60	53	57	Ditto, wind not so high as yesterday.
28	47	70	59	60	53	57	Fine day.
29	50	72	61	59	54	57	Ditto.
30	46	72	59	60	53	57	Frost in the valley this morning.
31	47	70	59	60	51	57	Hard frost this morning, fine day.
Monthly mean,	48	68	58	59	52	56	

MONTHLY OBSERVATIONS.

The month nearly throughout has been clear and fine, with generally frost in the valleys, in the morning. Wind light, and varying from S. to E.

Atmospherical Register kept at Kotagherry, for February, 1833.

	Temperature.						
Days.	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	Daily Observations.
1	47	68	58	54	51	52	Frost in the valleys this morning, fine day.
2	47	68	58	59	51	55	Ditto, ditto, ditto.
3	49	70	59	56	52	54	Fine day.
4	47	68	58	58	51	54	Ditto.
5	48	68	58	56	51	53	Ditto.
6	48	68	58	56	51	53	Ditto.
7	47	68	58	59	51	55	Ditto.
8	47	68	58	56	51	54	Ditto.
9	47	68	58	59	51	55	Foggy morning, fine day.
10	52	78	65	58	54	55	Fine day.
11	52	73	62	52	56	59	Ditto.
12	52	74	63	51	56	57	Ditto.
13	53	72	62	66	57	64	Ditto
14	53	75	64	66	54	60	Clear day, high wind.
15	52	71	63	64	56	60	Ditto.
16	52	74	63	66	54	60	Ditto.
17	50	72	61	63	55	59	Ditto.
18	52	73	62	66	55	60	Fine day.
19	49	72	60	62	55	58	Ditto.
20	54	72	60	61	55	59	Ditto.
21	54	68	61	61	56	59	Heavy rain during the night.
22	52	73	62	66	55	60	Rain last night, fine evening.
23	56	70	63	61	59	59	Fine day.
24	54	68	61	62	56	59	Ditto.
25	56	72	64	61	58	59	Cloudy morning, fine day.
26	53	75	64	59	58	59	Fine day.
27	54	72	63	61	58	59	Ditto.
28	53	75	61	61	57	59	Ditto.
Monthly mean,	50	68	50	61	54	58	

MONTHLY OBSERVATIONS.

Weather fine, with the exception of two days, during which a good deal of rain fell. For the first few days, there was hard frost in the valleys, but it has since quite disappeared. Light winds, varying from S. to E.

Atmospherical Register kept at Kotagherry, for March, 1833.

Days.	Temperature.						Daily Observations.
	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	
1	55	75	65	66	58	62	Fine day.
2	55	74	65	65	57	60	Ditto.
3	57	75	66	69	59	61	Ditto.
4	57	76	67	69	59	64	Ditto.
5	53	76	65	68	59	64	Ditto.
6	54	77	66	67	59	63	Ditto.
7	54	77	66	71	60	66	Ditto.
8	54	77	66	69	58	64	Ditto.
9	54	77	66	70	59	65	Ditto.
10	53	76	65	68	59	64	Ditto.
11	53	76	65	69	58	64	Ditto.
12	54	77	66	68	59	64	Ditto.
13	55	74	65	65	59	62	Ditto.
14	55	75	65	65	60	63	Ditto.
15	56	73	65	70	60	65	Ditto, wind rather high.
16	56	73	65	69	60	65	Ditto, ditto.
17	56	73	65	70	60	65	Fine day.
18	53	74	64	70	56	63	Ditto.
19	56	74	65	70	59	64	Ditto.
20	58	74	66	70	61	66	Ditto.
21	57	75	66	69	61	65	Ditto.
22	53	74	63	70	61	66	Ditto, wind high.
23	58	73	65	71	62	67	Ditto, ditto.
24	58	73	65	68	62	65	Ditto, ditto.
25	58	73	65	71	62	67	Ditto, ditto.
26	57	72	67	68	60	65	Ditto, light wind.
27	57	75	66	70	61	66	Ditto, ditto.
28	58	73	66	72	62	67	Ditto, ditto.
29	60	74	67	72	62	67	Ditto, ditto.
30	56	74	65	72	61	67	Ditto, ditto.
31	58	73	65	71	62	67	Ditto, ditto.
Monthly mean,	56	75	65	69	59	65	

MONTHLY OBSERVATIONS.

During the entire month the weather has been clear and cloudless, not a shower of rain having fallen. Temperature pleasant, but in consequence of the long drought, the country appears burnt up, and there has been some sickness amongst the natives. Wind generally light and varying from S. to E.

Atmospherical Register kept at Kotagherry, for April, 1833.

Days.	Temperature.						Daily Observations.
	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	
1	57	74	65	70	61	66	Fine day.
2	57	74	65	72	62	67	Ditto.
3	58	75	67	73	62	68	Ditto.
4	57	74	65	72	62	67	Cloudy morning, fine afternoon.
5	56	78	67	72	62	67	Fine day.
6	57	76	67	74	61	68	Ditto.
7	56	78	67	73	62	68	Ditto.
8	58	75	67	72	62	67	Ditto.
9	49	69	59	71	59	65	Foggy morning, heavy rain in the afternoon.
10	59	69	64	67	62	65	Fine day, cloudy afternoon, with a shower.
11	56	69	62	70	60	65	Heavy rain nearly all day.
12	57	67	62	70	58	64	Ditto all the afternoon and night.
13	57	71	64	66	59	64	Fine morning, cloudy evening.
14	54	70	62	70	58	64	Fine day, heavy rain during the night.
15	54	70	62	68	59	64	Ditto, light rain all night.
16	60	69	65	69	61	61	Cloudy forenoon, fine evening.
17	56	70	63	70	56	63	Ditto, ditto.
18	61	73	67	73	61	67	Heavy rain last night.
19	60	73	67	72	61	67	Fine day, cloudy evening, with light rain.
20	60	70	65	69	61	65	Fine day.
21	59	69	64	70	62	66	Ditto.
22	58	71	65	70	60	65	Ditto.
23	58	71	65	69	60	65	Ditto.
24	60	69	65	70	62	66	Fine morning, heavy rain in the afternoon.
25	59	71	65	69	61	65	Fine day.
26	57	72	65	70	64	67	Fine morning, rain in the afternoon.
27	59	71	65	69	61	65	Ditto, ditto.
28	60	72	66	70	61	66	Fine day.
29	60	72	66	72	63	68	Ditto.
30	60	73	67	70	61	66	Ditto.
Monthly mean,	58	72	66	70	61	66	

MONTHLY OBSERVATIONS.

A good deal of rain has fallen during the month, which has much improved the atmosphere, made the country look green and fresh again, and almost entirely dispelled the sickness. Wind light, varying from S. to E.

Atmospherical Register kept at Kotagherry, for May, 1833.

Days.	Temperature.						Daily Observations.
	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	
1	60	74	68	73	65	69	Fine day.
2	57	76	67	72	63	68	Ditto.
3	60	74	68	72	63	68	Fine morn hvy rain with thund. and ltning. in aftern.
4	57	76	67	73	65	69	Fine day, heavy rain during the night.
5	59	75	67	71	60	66	Fine day.
6	59	71	65	69	60	65	Fine morning, heavy rain in afternoon and night.
7	60	70	65	70	61	66	Fine day.
8	61	73	67	70	61	66	Ditto.
9	60	73	67	72	62	67	Ditto.
10	61	70	66	71	63	67	Ditto.
11	59	70	65	70	63	67	Misty morning, fine day.
12	57	70	64	69	63	66	Heavy rain during the forenoon.
13	60	70	65	70	63	67	Fine day, rain during the night.
14	59	69	64	70	61	65	Fine morning, heavy rain during the afternoon.
15	59	67	63	68	62	65	Cloudy day.
16	58	66	62	65	60	62	Fine morning, heavy rain in the evening.
17	59	69	64	67	60	64	Heavy rain during the day.
18	58	68	63	69	61	65	Fine day.
19	60	70	65	68	59	64	Ditto.
20	59	69	64	69	61	65	Very high winds all night.
21	59	68	64	65	62	63	Ditto ditto.
22	59	69	64	68	59	64	Wind not quite so high as yesterday.
23	59	69	64	69	61	65	High wind.
24	59	68	64	68	59	64	Ditto, fine day.
25	59	69	64	69	60	65	Ditto ditto.
26	59	69	64	69	60	65	Ditto, some rain in the afternoon.
27	59	69	64	68	61	65	Ditto fine day.
28	58	67	62	67	61	64	Ditto ditto.
29	57	68	62	67	59	63	Ditto, fine morning, rain in the afternoon.
30	59	68	64	67	59	63	Cloudy day, no rain.
31	58	67	62	68	61	65	Fine morning, high wind in the afternoon.
Monthly mean,	59	71	65	70	61	66	

MONTHLY OBSERVATIONS.

A considerable quantity of rain has fallen in the course of the month, but chifly during the night, and so as to admit of exercise being taken during some portion of the day: occasionally foggy and the sun generally obscured, but altogether the weather has been far from unpleasant. Wind high and very variable.

Atmospherical Register kept at Kotagherry, for June, 1833.

	Temperature.						
Days.	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	Daily Observations.
1	59	68	64	67	59	63	Fine morning, light rain in the afternoon.
2	60	69	65	68	60	64	Ditto ditto.
3	60	73	67	69	62	67	Fine day.
4	63	73	68	69	62	67	Ditto.
5	61	72	68	73	64	70	Ditto.
6	63	73	68	73	64	70	Ditto.
7	59	74	67	69	62	67	Cloudy day.
8	56	70	63	72	62	67	Fine morning, rain in the afternoon.
9	56	68	62	69	57	63	Do. hvy. rn. with hl. & th. & ltng. dur. aftern. & nt.
10	58	71	65	68	58	64	Do. hvy. rn. with th. & ltning dur. aftern. & nt.
11	59	73	66	70	56	63	Fine morning, rain in the afternoon.
12	58	71	65	72	62	67	Fine day.
13	59	73	66	70	56	63	Fine morning, rain in the afternoon.
14	58	75	67	70	61	66	Ditto, showers during the day.
15	60	74	67	71	62	67	Fine day.
16	60	69	65	70	61	66	Ditto.
17	59	67	63	68	59	61	Fine morning, foggy evening with some rain.
18	60	68	64	65	60	62	Ditto, showers during the forenoon.
19	60	75	68	67	59	63	Ditto ditto.
20	60	75	68	68	59	64	Fine day.
21	58	66	62	70	61	66	Ditto, very high wind during night with some rain.
22	58	66	62	63	59	61	Ditto.
23	60	75	68	68	59	64	Ditto.
24	57	70	63	70	58	64	Foggy day.
25	58	66	62	70	61	66	Cloudy day.
26	57	74	67	74	57	66	Fine day.
27	56	74	65	73	57	65	Fine morning, rain during the afternoon.
28	56	70	63	66	57	61	Fine day.
29	58	74	66	74	58	66	Fine morning, rain in the afternoon.
30	58	74	66	74	58	66	Fine day.
Monthly mean,	59	71	65	70	59	64.5	

MONTHLY OBSERVATIONS.

During the month there have been frequent showers of rain with some thunder and lightning, the effect of the S. W. monsoon. On the evening of the 9th a fall of very large hail-stones took place, which considerably reduced the Thermometer. Wind generally pretty high and variable, but most frequently from the N. W.

Atmospherical Register kept at Kotagherry, for July, 1833.

	Temperature.						
Days.	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	Daily Observations.
1	57	73	65.	71	58	64.5	Fine day.
2	57	72	64.5	66	59	62.5	Fine morning, rain during the day.
3	57	69	63.	61	60	60.5	Ditto, rain in the afternoon.
4	59	70	61.5	69	59	64.	Fine day.
5	59	71	65.	71	58	64.5	Rainy day.
6	59	71	61.5	71	58	64.5	Drizzly rain.
7	60	66	63.	64	60	62.	Rainy day, high wind in the evening.
8	59	66	62.5	66	59	62.5	Fine morning, slight showers during forenoon.
9	60	69	64.	65	59	62.	Clear day.
10	58	68	63.	68	59	63.5	Ditto, high wind.
11	58	68	63.	65	59	62.	Clear day, wind rather high.
12	59	68	63.5	68	59	62.5	Ditto, ditto.
13	56	65	60.5	65	57	61.	Fine day.
14	58	68	63.	64	60	62.	Clear day, wind high.
15	58	68	63.	66	59	62.5	Ditto.
16	58	65	61.5	64	60	62.	Ditto.
17	56	65	60.5	64	60	62.	Ditto
18	58	68	63.	65	59	62.	Foggy day.
19	58	68	63.	66	59	62.5	Clear day, cloudy evening.
20	58	65	61.5	64	60	62.	Fine day.
21	58	66	62.	64	59	61.5	Ditto.
22	58	66	62.	66	58	62.5	Ditto.
23	57	68	62.5	66	58	62.	Clear day, wind rather high.
24	57	68	62.5	66	58	62.	Ditto, cloudy evening, ditto.
25	58	71	64.5	66	59	62.5	Ditto, wind high in the morning, calm evng.
26	58	68	63.	64	59	61.5	Fine day, evening lowering.
27	58	67	62.5	68	58	63.	Fine day,
28	58	67	62.5	66	58	62.	Ditto.
29	58	67	62.5	68	58	63.	Ditto.
30	58	68	63.	64	59	61.5	Ditto.
31	58	68	63.	64	59	61.5	Ditto.
Monthly mean,	58	68	63.	65.9	58.8	62.35	

MONTHLY OBSERVATIONS.

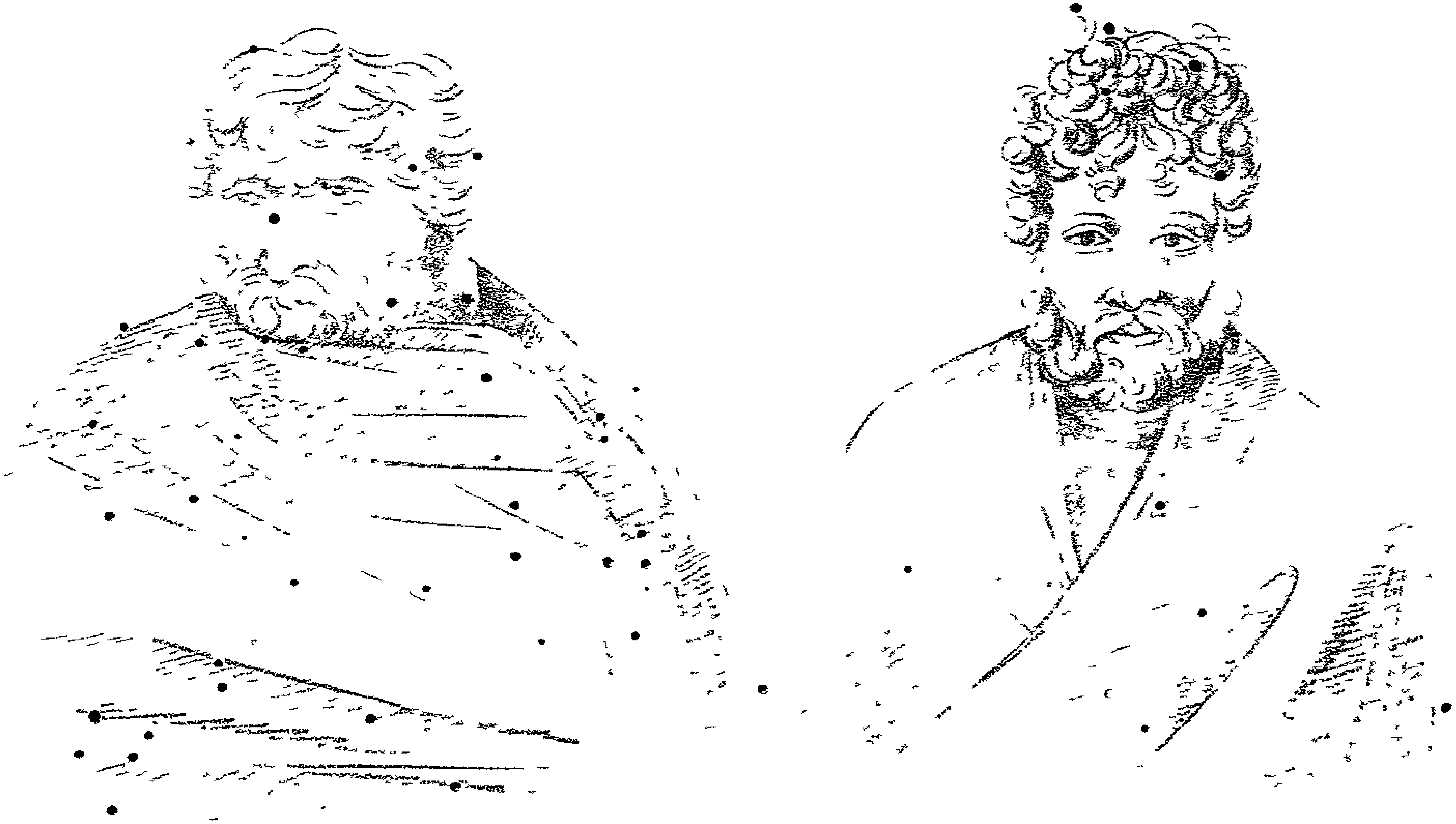
This month has been exceedingly pleasant. At the commencement we had some slight showers of rain, but towards the latter part of it, the wind became lighter, and the weather has been clear and delightful.

Atmospherical Register kept at Kotagherry, for August, 1833.

	Temperature.						
Days.	Minim.	Maxim.	Mean.	10 A. M.	10 P. M.	Mean.	Daily Observations.
1	56	70	63.	66	59	62.5	Fine day.
2	57	68	62.5	66	58	62.	Ditto.
3	57	66	61.5	66	57	61.5	Ditto.
4	..	..	..	..	..	..	Ditto.
5	..	..	..	.	..	..	Ditto.
6	55	70	62.5	66	58	62.	Ditto.
7	55	70	62.5	68	56	62.	Ditto, high wind.
8	55	70	62.5	66	56	61.	Ditto, ditto.
9	55	70	62.5	66	56	61.	Ditto.
10	58	71	61.5	68	59	63.5	Ditto.
11	58	69	63.5	68	59	63.5	Ditto.
12	58	69	63.5	68	59	63.5	Ditto.
13	58	68	63.	66	58	62.	Fine morning, misty towards afternoon.
14	58	69	63.5	66	59	62.5	Cloudy day, heavy showers towards evening.
15	58	80	69.	68	59	62.5	Close morning, heavy rain in the afternoon.
16	56	66	61.	65	58	61.5	Fine morning, heavy rain about 12.
17	56	64	60.	64	56	59.	Ditto.
18	56	64	60.	64	56	60.	Ditto.
19	58	66	62.	66	59	62.5	Fine day.
20	55	65	60.	64	56	60.	Fine, cloudy day.
21	55	66	60.5	64	56	60.	Ditto ditto.
22	55	66	60.5	60	56	58.	Cloudy day, high wind.
23	56	66	61.	64	56	60.	Cloudy morning, slight rain in the evening.
24	55	66	60.5	66	56	61.	Fine day.
25	57	68	62.5	66	59	62.5	Cloudy day.
26	57	68	62.5	65	56	60.5	Cloudy morning, light rain in the evening.
27	56	65	60.5	62	57	59.5	Ditto, ditto.
28	58	68	63.	64	59	61.5	Fine day.
29	58	68	63.	68	59	63.5	Ditto.
30	58	68	63.	68	59	63.5	Ditto.
31	57	68	62.5	68	59	63.5	Ditto.
Monthly mean,	56.0	68	62.3	65.7	57.5	61.26	

MONTHLY OBSERVATIONS.

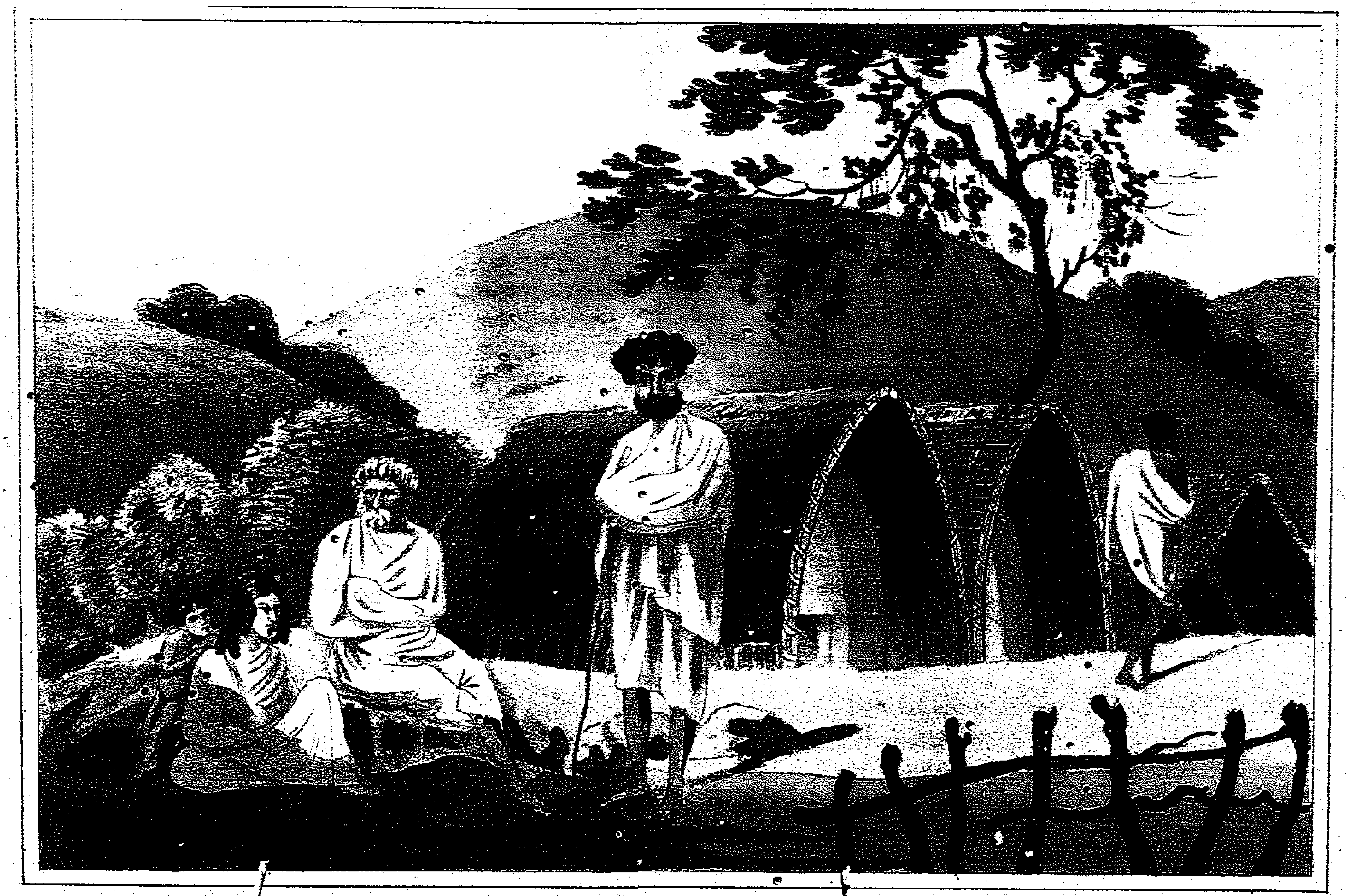
The weather was remarkably fine during the early part of this month, but towards the middle we had frequent showers, occasionally heavy, but seldom of long continuance, or severe, such as to prevent exercise being taken either morning or evening. The last few days again have been exceedingly fine.



TODAS Father and Son

Drawn on Stone by J Bennett

J B Tassin lith.



J. B. Tassin lith

drawn on Stone by J. Bennett

A TODA FAMILY

IMPERI
LIBRA

No. IV.

Extracts from Captain Harkness' Account of the Inhabitants of the Neilgherry Hills.

On approaching Ootacamund from the north-west, or by the main road leading from the Mysore country, the opposite mountains are in the highest degree beautiful and picturesque, forming a majestic and extended amphitheatre.

Nor is the scene less beautiful on a nearer approach; for you then find the green bespangled with a variety of the most beautiful wild flowers, of every diversity of colour; the trees, among which appear the crimson Rhododendron and the white Camelia, varying in shade and richness of foliage; and some covered with moss, assuming all the hoary appearance of winter; while the banks of the rills and streamlets that meander at their base, are lined with dog-rose and jessamine; and all around are seen the strawberry, blackberry, and numerous other wild fruits, flourishing in spontaneous luxuriance.

Several of the little streams here mentioned, meeting at one point, fall into a natural basin, which, confined at its south-western extremity by a strong mound of earth, forms an expansive and delightful *Lake* of six or seven miles circuit. This beautiful piece of water, which in some parts, spreads out to a considerable width, and in others winds in a serpentine course among hills gently rising from its banks, and clothed with the softest verdure, has now a public carriage road surrounding it, affording one of the most scenic, healthful, and agreeable drives of which India, or perhaps any part of the world can boast.

The appearance of the Todas or Toruwars, who may be considered the original inhabitants of the hills, is very prepossessing. Generally above the common height, athletic and well made, their bold bearing, and open and expressive countenances, lead immediately to the conclusion that they must be of a different race to their neighbours of the same hue, and the question naturally arises, who can they be? The word Toruwars is the Tamil term for herdsmen. This remnant of a race, perhaps the most extraordinary of any known, does not exceed in number, including both sexes, and of all ages, six hundred.

They never wear any covering to the head, whatever the weather may be, but allow the hair to grow to an equal length, of about six or seven inches; parted from the centre or crown it forms into natural bushy circlets all round, and at a short distance more resembles some artificial decoration than the simple adornment of nature. The hair of the face also is allowed a similar freedom of growth, and in every instance, except from the effect of age, it is of a jet black, and of the same degree of softness, as that of the natives of the low country.

A large, full, and speaking eye, Roman nose, fine teeth, and pleasing contour, having occasionally the appearance of great gravity, but seeming ever ready to fall into the expression of cheerfulness and good humour, are natural marks, prominently distinguishing them from all other natives of India.

The women are of a stature proportionate to that of the men, but of complexion generally some shades lighter, the consequence perhaps of less exposure to the weather, with a strongly feminine cast of the same expressive features as the men; most of them, and particularly the younger, have beautiful long black tresses, which flow in unrestrained luxuriance over the neck and shoulders, or are frequently disposed in a profusion of natural ringlets on each side of the head.

With a modest and retiring demeanour, they are perfectly free from the ungracious and menial-like timidity of the generality of the sex of the low country; and enter into conversation with a stranger, with a confidence and self-possession becoming in the eyes of Europeans, and strongly characteristic of a system of manners and customs widely differing from those of their neighbours.

They wear necklaces of twisted hair or black thread, with silver clasps, and here and there a bead, and suspended to them bunches of cowry shells, which hang down from the back of the neck between the shoulders. On the arms, immediately above the elbow, they wear a pair of armlets of brass, those of the right arm being much larger than those of the left; silver bracelets are on the wrists, and on the fingers and thumbs of each hand, a number of rings of various descriptions. They also wear a zone round the waist, composed of a sort of chain work, of either silver or mixed metal resembling brass.

The upper garment, or mantle, resembles that of the men; but it is worn differently, and, reaching to the feet, envelopes the whole frame.

This attire is by no means graceful; it gives them an unfeminine and mummy-like appearance; and neither they nor the men having any pretensions to cleanliness: this wrapper is from that circumstance often rendered still more unseemly.

They are, however, a lively, laughter-loving race, and in the sudden transition and free expression of their sentiments, shew strength of feeling, and correctness of thought, little to be expected under such a garb.

Their life being in every respect a pastoral one, they do not congregate in towns or villages, but every family or the principal branches of each family, live separately; and these places of their residence are called Morrts or Munds (corresponding to our word home).

In each of these morrts is a building in size, construction, and appearance superior to the others, a short distance apart from them, and surrounded by a wall. In this is carried on all the process of the dairy, such as making butter, clarifying and converting it into ghee, &c.; they also attach to this building a sacred feeling, and would not at first allow me to go near it, declaring that there was a deity within whose malevolence would be provoked by my near approach.

The huts in which they dwell, and which are generally clustered together, very much resemble in appearance the tilt of a waggon. The roof, which is formed of thatch very neatly put on, is supported on posts, and thick rude planks of wood, which, excepting at the ends, are little more than three feet in height. The whole building is about twelve feet in length, eight in breadth, and seven in height, from the ground to the ridge of the roof. At one end is a little door, two feet and a half in height, by two feet broad, and this completes the whole external appearance of each dwelling. At a short distance is an area, of about forty or fifty yards in diameter, enclosed with a wall of rude stones, piled one upon another without cement, and in which the herd is secured during the night.

Each is prettily situated on a gentle slope, occupying a beautiful green on the borders of a wood, and with which, in most instances, they are partially surrounded. But migrating from one morrt to another, or from one mountain side to that of another, as the seasons change, or as the pastures in their immediate vicinity begin to fail, and cultivating no grain or vegetables of any description, their morrts have none of those appearances which denote the long-established and settled residence; or which bespeak, on the part of the settler, peculiar attachment for the spot on which he lives.

They do not breed poultry, pigs, sheep, goats, or animals of any description, except the buffaloe; nor is the cow or ox (the creature so highly valued, and even venerated by the people of the low country), held in any estimation, or considered worth keeping.

The only articles which the Todas produce are butter and ghee; such of the latter as they do not require for their own consumption, they dispose of to some of the neighbouring tribes, or barter for grain and cloth, and these transport it to the low country.

Evidently of a peaceful character, having no weapon of defence, no fastening to their dwellings further than the little door previously mentioned, (for situated as their morrts are, they cannot be said to have sought it either from the forest or morass:) no protection against the wild beasts of the field, not even the nightly guardian or common watch dog, living rather in families than in societies, without any of those bonds of union which man in general is induced to form, from a sense of common danger, or to guard against the oppression of his neighbours, and as previously mentioned, migrating form one part of the hills to another, the Todas pass their days in a manner quite peculiar to themselves, and apparently in all the silence, quiet, and rural simplicity, characteristic of a patriarchal government and a pastoral life.

Few in number, as before observed, not exceeding six hundred, and apparently a remnant of some tribe driven by religious persecution to seek safety in these mountains, they may have been taught by experience that it is wiser for them to live in fellowship, or quiescent submission, than to provoke hatred or hostility.

They however assert a claim to the soil, and declare that it was only by their sufferance that the other tribes came to reside on it; that they receive from them a payment in kind, not however, for so many kaunies or acres, but for such a spot, measuring it with the eye; an indefinite sort of demarkation, which, where land is so plentiful, and the inhabitants so few, is not attended with any inconvenience.

Of the tribes here alluded to, one whom they call the Marves*, a race of Hindus, who but a few generations ago emigrated hither, to escape the oppression and tyranny of their masters, and who are ten times more numerous than the Todas themselves, speak of the latter, and treat them with a respect and observance denoting that they either consider them superior in natural qualities, or that this deference is due to them by prescriptive right.

Whatever their religion may be, it is evident that it is generally misunderstood: and perhaps the true nature of it is altogether unknown. Of itself it forms a subject of curious inquiry; and one of which a correct understanding will perhaps go further than any other, to develope the history of this extraordinary people.

Nor has their religion, as far as I am able to judge, any resemblance to that of the Buddhist, the Moslem, or of any other people of the present day. They salute the sun in its rising, and believe that after death the soul goes to Huma-norr or Om-norr†, a country respecting which they seemed rather to look to me for information.

Their language, the pronunciation of which is deeply pectoral, appears to be quite distinct from the languages of the surrounding countries. With the Sanscrit it has not the least affinity in roots, construction, or sound; and, if I may venture to say so, as little with any other Asiatic language of the present day.

It may, perhaps, be said to have some resemblance to the vernacular Hindu languages of the Peninsula, but only in so far as these languages still possess simple words, not of Sanscrit origin; and the Tamil possessing by far the greater number of such words, the resemblance to it is consequently greatest. There are also two sounds, the Zha and the Ukh‡, which are of constant occurrence in the Toda, and which in respect to the vernacular languages of the plain are peculiar to the Tamil, and its sister dialect, the Malayal'ma. Besides these, the pronouns, the plural, the honorary termination of verbs, and the negative verb, come nearer to the Tamil than to any of the other dialects.

With these exceptions, however, it differs widely, and bears so little affinity in genus, either to it or to any of the dialects of the present day, that although these hills have now been the seat of the principal collector's cutcherry for the last ten years, there is no instance of its having been acquired by any one of the native servants, sufficiently for them to understand the expression of the simplest occurrence.

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* More generally known by the name of Barghers, Badacars, or Vadacars.

† Literally, the great country.

‡ At the present day, however, these two sounds are very imperfectly expressed in either the Tamil or the Malayal'ma, and it is not uncommon for other sounds to be substituted for them.

They have no written character, nor any visible symbol by which to communicate their thoughts; and the language being merely oral, it is of course the more difficult to acquire.

At the foot of these mountains, and for a short distance within the forests, extending from their base into the plains, live a race of people, commonly known by the name of Erulars. They are divided into two classes, one called Urali, the other Curutali.

Above these, at a height varying from one to two thousand feet, in the clefts of the mountains and little openings in the woods, with which at this elevation they are girt, live another race, calling themselves Curumbars. This race are all one class.

People answering to the general description of both these tribes are to be met with in many of the mountainous parts of the Peninsula, but the Erulars of this vicinity differ from them in many particulars; and the Curumbars, from their connexion with the tribes who inhabit the more elevated parts of mountains, and particularly with the Todas, are now quite distinct from the people bearing this name in other parts of the country.

Neither of those tribes know the use of the plough, or at least they do not use it to till any part of the lands which they occupy; and being quite unskilled in all the arts of life, their state of being is but little removed from that of utter uncivilization.

Their languages are jargons formed from a mixture of those of the nations nearest to them, such as the Tamil, the Carnataca, or the Malayal'ma; that of the Curumbar having a considerable intermixture of Toda. They may be classed as Hindus; and to the introduction among them of some of the Hindu observances, they seem to owe the little civilization to which they can be said to have claim.

The Todas do not consider the Erulars as forming a part of the inhabitants of the hills, but they allow this designation to the Curumbars, whom they call Curbs, and from whom they receive certain services.

The next are the Cohatars. They occupy many of the elevated parts of the mountains.

They are a strange race, have no distinction of caste, and differ as much from the other tribes of the mountains as they do from all other natives of India. They cultivate a considerable quantity of the different kinds of millet, and of the poppy, and sometimes a little barley. They are the only artisans of the hills, being goldsmiths, potters, chacciles, &c. They are not Hindus, but worship ideal gods of their own, which, however, they do not represent by any image. Their villages are, many of them, very prettily situated, and generally on a hill; and every hill thus occupied is called Cohatagiri, or, as more commonly pronounced, Cotagiri. These people the Todas call Cúvs, their term for mechanic.

We now come to the numerous, the most wealthy, and what must be considered the most civilized class of the inhabitants. These are th Burghers, or Buddagers.

By this general term is understood the whole of the people who, since certain period, have migrated to these mountains. They divide themselve into no less than eight different classes, but are all Hindus of the Siva sect and the dissimilitude among most of these classes is too trifling to be worth of remark. The least respected among them are a class who, as well a being cultivators of the earth, also manufacture a coarse kind of sackcloth other two of the classes are of the caste who wear the lingam, one being superior, and qualified to officiate as priests to the whole of the others; and another of the classes are repudiated Brahmins. These however still wear the sacerdotal string, and retain some privileges in the performance of their worship; but they are classed with the other people, and are without any pretension to superiority over them.

These several classes compose the tribe which by us is known by the general term Burgher*. They are the principal cultivators, and as their chief dependence is on husbandry, they may fairly be designated the farmers of the hills.

Their language is principally the Carnataca, having but a small intermixture of the Toda. The Todas, who also know as little as we do in general of the existence of any difference of caste among themselves, call them all Marvs, their term for a labourer.

But to return to that tribe which is the least in number of all the inhabitants of the hills, the Todas, or as they are more commonly called the Toruwars, a name given to them by the other tribes, or rather by the natives of the plain, and which is not in use among themselves. They call themselves (par excellence) Mars: and the question, "is that a Burgher, or a Toda?" would with them be literally, "is that a labourer, or a man?"

They are divided into two branches, or what may be considered two grand families. One called Peikis, or Tarallis, and who are competent to hold all sacred offices; the other Kutas, or Tardas, who are competent only to hold minor ones within their own particular families, and who may be onsidered as the lay class.

Till within the last few generations, these two branches kept themselves uite distinct and never intermarried; but since that period, intermarriages ave taken place, and the progeny of these are called Mookhs, a general erm for children or descendants.

* Called by the natives generally and more properly Badacars or Vadacars from Badacu or Vadacu, north, having come to the hills from that quarter. In number bout 10,000 of both sexes and all ages.

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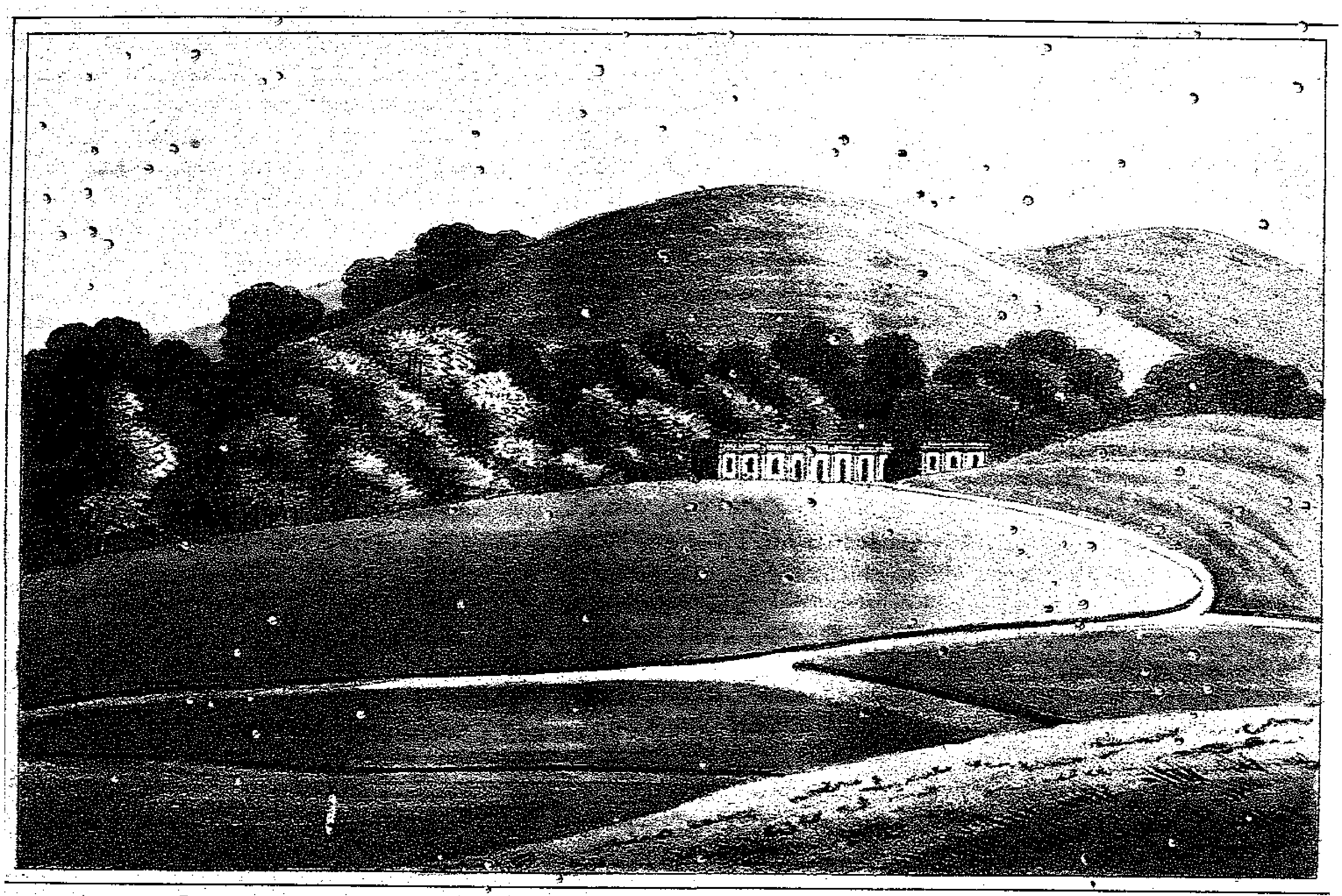

J.B. Tassin Lith.

MISSION SCHOOL — OOTACAMUND

Drawn on Stone by J. Bennett.

No. V

Church Missionary GRAMMAR SCHOOL *on the Neilgherries, under the Patronage of the Right Honorable S. R. Lushington, M. P. Governor of Madras.*

The Church Missionary Grammar School, on the Neilgherries, is to be especially known and distinguished as a Seminary for sound learning and religious education, according to the doctrines and discipline of the united Church of England and Ireland.

Religion, as a subject of supreme importance, is to occupy the first consideration. The Head Master will have it especially in charge to watch over the principles and conduct of his pupils—and it is purposed, that the whole spirit of the Institution be the kind, cheerful, and affectionate piety of a wise Christian family, rather than any thing of the harsh and severe character of a dry system of mere technical instruction.

The property and management of the school are to be wholly in the Madras Corresponding Committee of the *Church Missionary Society*, as representatives of the Parent Society of that name in London.

It shall rest with the Corresponding Committee to select the children to be admitted; to continue or dismiss them; to fix and receive the amount payable for their education; to make any change in the Missionaries who may be placed in charge of the Establishment, should they see occasion to do so; to appoint or remove all individuals therein employed; to conduct all correspondence relative to the children; and to remove a child whenever they deem it necessary.

Persons not in the service of the Church Missionary Society, applying for the admission of a pupil, shall give adequate security to the Treasurers of the Corresponding Committee, on the Society's account, to indemnify the Society against loss from the death or insolvency of the parents or other representatives of such child, and for taking the pupil off the establishment on completing his seventeenth year, or on his removal being on any other account requested by the Corresponding Committee.

The Establishment is to consist of a Head Master and a Junior Master, always from England; of Tutors for Writing, Arithmetic, Indian Languages, &c.; of Senior Students and of Pupils, on the foundation, whose expenses are to be wholly defrayed by the Church Missionary Society.

Admission also will be given to a select number of *other pupils*, who will pay all their own expenses, but in every other respect be treated as pupils on the foundation.

Pupils on the foundation are to be at least seven years of age*, and to consist exclusively of sons of Missionaries in the service of the Church Missionary Society.

Other pupils to be boys, not under seven years of age, born in wedlock, whose parents are not in the service† of the Church Missionary Society.

All pupils on attaining their seventeenth year shall leave the institution as matter of course; unless they be elected by the Corresponding Committee to be "*Senior Students on the foundation*," in which case they shall enter into a bond to place their services at the disposal of the Church Missionary Society.

Other pupils, on attaining their seventeenth year, may be allowed to remain, by permission of the Corresponding Committee, to receive their board and education among the senior students on the foundation, on payment of 70 rupees monthly, in advance, to the Treasurers of the Madras Corresponding Committee—all other expenses being borne by themselves, as mentioned above.

No boy can be received into the school, either on first admission or on re-admission after vacations, except by written authority, addressed to the Head Master, by the Secretary of the Madras Corresponding Committee.

There shall be a Half-yearly Examination, after which the Head Master shall make a particular report to the Committee, of the proficiency, qualifications, &c. of every pupil, and the behaviour of every person employed in the Establishment.

Subjects of Instruction.

I.—*Religion.*

II.—*Languages* and *Literature,* ancient and modern; commencing with English reading and Grammar.

III.—*Mathematics;* commencing with Arithmetic and Practical Geometry.

IV.—*Knowledge of the works of God in nature;* commencing with Natural History.

V.—*Arts and employments of men.*

VI.—*History, and its subsidiary branches of knowledge.*

Methods of Teaching.

The new methods of teaching, as detailed by Dr. Bell, and practised in the Charter House and other European Grammar Schools, are to be introduced as extensively as possible.

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[*] Orphans under 7 years of age, but otherwise eligible to be admitted on the foundation, will be placed with the Mistress of a Preparatory School, until of age to be received into the Grammar School.

[†] In the admission of Pupils, *not on the foundation,* sons of Missionaries will have the preference.

The Arrangement of Time, and Subjects of Instruction.

TO BE FOR THE PRESENT AS FOLLOWS:

At day break, exercise; private devotions.

Monday to Saturday.	6 or 6½ to 8	*Mathematics,* Mondays, Wednesdays and Fridays. *History,* Tuesdays, Thursdays, and Saturdays.
	8 to 9	*Works of Nature.*
	9 to 10	Breakfast, and Family Devotions.
	10 to 1	*Ancient languages and literature,* exercises, themes, and lectures in composition.
	1 to 2	Recreation.
	2 to 3	Dinner; after which, on Saturdays, Psalmody and Recreation.
Monday to Friday.	3 to 5	*Modern languages,* Mondays, Wednesdays, and Fridays. *Arts,* &c. Tuesdays and Thursdays.
	5 to 5½	*Writing extracts* from books under the direction of the Head Master.
	5½ to 7	Recreation.
	7 to 9	Tea, Family Devotions, miscellaneous reading, amusing experiments, &c.

The forenoon and afternoon employments are to begin with a lesson selected by the Head Master from the *Old Testament.*

The morning and afternoon employments are to end with the *New Testament* lessons for the day.

Some part of each Sunday is to be regularly employed in explaining a portion of the *Common Prayer Book.*

Monthly payments, (in advance,) to be for the present as follows:

With a pupil under 10 years of age,	... 42 Rupees per mensem.
With other pupils under 17,	... 50 ————
With pupils who have completed their 17th year,	70 ————

The articles hereunder mentioned are to be provided by each pupil:

a breakfast and dinner spoon.
a large knife and fork.
a small do. do.
a drinking cup.
2 suits of woollen clothes.
15 do. cotton (white or coloured.)
15 shirts.
8 night shirts.
12 towels.
combs and brushes.
a cot and mattress.
2 pair of sheets.
1 pair of blankets.

The First Public Examination of the Neilgherry Mission School took place in the School Room of the Institution on the 19th of Oct. 1833, before a large Assembly of the Ladies and Gentlemen of Ootacamund. General Dalrymple in the Chair.

The Pupils were prepared for Examination in Arithmetic, Algebra, Simple Equations, and Plane Trigonometry—in Latin and Greek—in English, Roman, and Grecian History—in Geography, and the Use of the Globes, and in the History, Geography, and Chronology of the Pentateuch. Much was necessarily omitted for want of time.

The following was however the proposed plan of Examination.

1st Book of Euclid.—Simple Equations and cases in Plane Trigonometry.

Greek, 1st Class.—The whole of the extracts from Xenophon, Thucydides, and Herodotus, in the 1st volume of Dalzel's Collectanea Græca Majora.

Two Books of Homer's Iliad.

Latin.—The whole of the extracts from Livy and Tacitus in the Eton Scriptores Romani.

Six Books of Virgil's Æneid.

Greek, 2nd Class.—Dalzel's Collectanea Græca Minora.

Latin.—Cicero de Senectute, and 1st Book of the Æneid.

Latin, 3rd Class.—Dr. Valpy's Delectus Sententiarum.

Bible Class.—The History, Geography, and Chronology of the Pentateuch.

English History.

Use of the Globes and Geography.

Junior Class.—In reading, spelling, parsing, Geography, and Arithmetic.

The task of examining fell principally to the lot of the Tutor[*].

The Gentlemen present were however invited to put questions: several of them kindly did so; and to all such questions, with very few exceptions, prompt and correct answers were returned.

The Bible Class showed a correct knowledge of the most minute incident recorded in the Pentateuch.

The Junior Class performed the common rules of Arithmetic with great rapidity, and in English parsing, turned nouns into verbs, verbs into adjectives, &c.

The Class in English History were perfectly acquainted with the date and order of succession of the English Kings, on what ground each line rested its claim to the crown, and also with the earlier periods of English History before the Norman conquest.

The senior pupil proved that he was accurately acquainted with the formation of the tenses both in the Greek and Latin languages, and answered with the utmost readiness all the questions in Geography, Chronology, &c. which were put to him in Grecian and Roman History.

The examination appeared to give great satisfaction to the company assembled on the occasion.

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[*] The Rev. James B. Morewood.

No. VI.

Outline of a Plan for an Agricultural Settlement on the Neilgherries.

The Neilgherry district appears to offer many facilities for the establishment of an extensive agricultural settlement, to be conducted on the British system of husbandry, and if the actual condition and circumstances of the several classes of Christian residents in India, whether British or country-born, be examined, it will soon appear that the advantages of such a settlement would be numerous and important.

Many officers, who wish to retire on their pension, would gladly remain in India, if they could secure the means of applying themselves to farming pursuits with a fair prospect of success under a healthy climate. Individuals who have come out to India for commercial purposes, such as indigo planters, would often, on the failure of health or in consequence of disappointment in their plans, gladly betake themselves to such a settlement, where they might hope to maintain themselves in a comfortable manner, and to bring up their families to rigorous industry. A third class in which our great cities abound are, sickly and unfortunate artisans: these, as is well known to the conductors of the charitable institutions in Calcutta and Madras, are very numerous, and the distress which overwhelms them so appalling, that some systematic plan for their relief, or removal, must be speedily adopted. Besides these, invalids or discharged soldiers of good character, might be permitted to share in the benefit. Thus far, as respects the British residents. The very great advantages likely to occur to the country-born, are too obvious to require to be stated—so obvious indeed, that regulations will be necessary in the way of restraint rather than incitement, as soon as the plan is matured and offered for acceptance.

It is submitted, that as the whole measure has respect to the actual residents in India, the privilege of settling shall be strictly confined—

1st. To the Company's Servants, Civil or Military.

2nd. To individuals who have come out under license, and have been full three years in India.

3rd. To individuals who are without licence, but have lived full seven years, in one of the presidencies. The purport of these restrictions is to prevent an influx of fresh settlers from home, a result quite beside the real object in view.

The form and manner of assigning and granting allotments may be taken at once from the regulations adopted, after great consideration, in respect to the recent settlements on the Western Coast of New Holland. The principle introduced, and rigidly acted upon, is, that the number of acres granted shall be in proportion to the amount of capital ready to be invested; half-pay, or pension, or any other public allowance being considered as equivalent to capital. The tables of computation by which this equivalency may be estimated have been carefully prepared. Besides these settlers who have capital, there will be many who are wholly destitute; these may be provided for in the method practised with so much success in the Netherlands; they may be supplied to a certain extent with food, clothes, implements, and necessaries, upon the credit of their labour if cultivators, or their skill if artisans. An industrious man will soon work himself out of debt, an idler should be dismissed the settlement.

It is plain that the Government will have nothing to give in aid of such a settlement but facilities and protection; but it would be expedient that they should in the first instance establish a well supplied store of English made agricultural implements, to be sold at cost price. The pecuniary return to the Government would soon be considerable, if the land were granted on condition, that after three years' gratuitous occupancy the settler should pay, as a perpetual rent, an assigned proportion of the actual produce. With a view of fixing the amount of such payment, and adjusting it fairly according to the changes which must frequently take place in the money value of agricultural produce, a system may be introduced very closely resembling the Irish Tythe-computation bill; and if the proportion fixed be not too large in the first instance, the rents will be collected regularly without the slightest trouble. The tenure of the farms should be lease-hold for 21 years, renewable every seven, on payment of a fine not exceeding one half the annual rent.

The above is given as an outline merely; should the importance of the object be recognised and the fundamental principles adopted, it would be easy to supply practical details.

True copy of a prospectus sent to me by a late Lord Bishop of Calcutta.

(Signed) R. Grame, *Lieut.-Col.*

Ootacamund, October 20th, 1833.

No. VII.

Rule of the Madras Club.

RULE I.

The Madras Club shall consist of an unlimited number of members.

RULE II.

The following members shall be admitted without ballot.

1. All gentlemen who shall have become members prior to the 30th September, 1832.

2. Members of the Government and the judges of the Supreme Court, on intimating their wish for admission to the Secretary within two months after their arrival in this presidency.

3. All officers and gentlemen belonging to this presidency, but absent from it prior to the 1st of May, 1832, provided their desire to be admitted be signified to the Secretary within two months after their return.

4. All Members of the Bengal Club shall be considered Members of the Madras Club, as vice versâ all Members of the Madras Club are of the Bengal Club, subject only to the usual charges attending a residence in either Club House.

RULE III.

The following classes of gentlemen shall be eligible by ballot.

1. Civil Servants on quitting College,
2. Members of the Bar and Clergy,
3. Assistant Surgeons of the H. C. Service,
4. Gentlemen on the Government-house list,

} on arrival in India.

5. All Officers of the King's and Company's Services of two years standing.

RULE IV.

The following classes shall be admitted as Honorary Members.

1. The personal staff of the Governor General and Commander-in-chief in India, and of the Governors and Commanders-in-chief of the other presidencies.

2. All commissioned officers, including all those of the Ward Room of His Majesty's Navy belonging to the India station.

3. All commissioned officers of the Indian Navy and commanders of Indiamen.

The above classes are not eligible as permanent members.

4. All Members of His Majesty's or the Honorable Company's Services belonging to the other presidencies or Honorable Company's settlements, not permanently residing within the limits of the Madras territories, and *all gentlemen on the Government-house list of those presidencies* and not so permanently residing, who may be desirous of availing themselves of the advantages of the Club, may be admitted as honorary and occasional members, at the signed recommendation of any two members of the committee, to be entered in a book kept for that purpose.

5. Honorary members to have all the privileges of the other members, except that of ballotting.

RULE V.

No person dismissed from His Majesty's or the Honorable Company's Services can be elected, or remain a member of the Club unless re-instated.

RULE VI.

1. The candidate must be proposed by one member and seconded by two other members. His name, accompanied by a statement mentioning in what capacity he is eligible, together with that of the proposer and two seconders, shall then be exposed in a conspicuous part of the Club House for a period of at least 15 days.

2. The Ballot shall take place between the hours of 10 A. M. and 6 P. M. on the first Monday and Tuesday in every month, and shall be open till 1 P. M. on the ensuing Wednesday. Members ballotting are to sign the book kept for that purpose.

3. One black ball in ten shall exclude, and unless there are 20 voters the ballot shall not be valid.

RULE VII.

1. The Entrance Donation shall be Rupees 175. But in cases where application as a candidate is preferred within two months after becoming eligible, the Donation shall be only Rupees 70.

2. Subscriptions for all Non-Resident members shall be one Rupee per month: for members at St. Thomas's Mount, Palaveram, Poonamallee, and also Regimental Officers attached to the Garrison of Fort St. George, two Rupees; and for Resident Members, four Rupees. Subscriptions shall be paid quarterly, and in advance, viz. on the 1st of January, 1st of April, 1st of July, and 1st of October.

3. Subscriptions shall cease during the period of absence in Europe.

4. Honorary Members shall not be required to pay the Entrance Donation.

5. Non-Resident Members arriving at the Presidency, and availing themselves of the advantages of the Club, shall pay their Subscriptions as Resident Members during their stay at Madras.

RULE VIII.

1. All the concerns of the Club and its internal arrangements shall be managed by a Committee, consisting of an unlimited number of the Members; the President of whom shall be elected annually by the Committee.

2. The Senior Officer of each Regiment stationed at the Mount, Poonamallee, Palaveram, and the Presidency, who may be a Member of the Club, shall be ex-officio a Member of the Committee.

3. The Committee shall have the power of adding to their number from time to time, as occasion may require.

4. The Committee shall hold an ordinary Meeting on the first and third Wednesday of every month, to transact current business, and to audit the accounts.

5. Any three of the Committee, with the Secretary, shall form a quorum on the ordinary days of Meeting.

6. General Meetings of the Committee will be held as occasion may require in the manner, and for the purposes, hereinafter mentioned.

7. A General Meeting shall consist of not less than nine Members.

8. The President, when it shall appear to him necessary, or on the requisition of any two of the Committee, shall call a General Meeting of the Committee.

9. Any wilful infraction of the rules of the Club, or of the ordinances of Committee, shall be taken immediate cognizance of by a General Meeting of Committee, whose duty it is, in the event of any circumstance occurring likely to disturb the order and harmony of the Club, to convene a General Meeting of Subscribers, giving fourteen days' notice; and in the event of its being voted at that meeting by two-thirds of the persons present, such votes being obtained by Ballot, that the name of any member be removed

from the Club, he shall thereon cease to belong to it, and notification thereof shall be made to him by the Secretary—his subscription for the current quarter being returned to him.

10. The pecuniary concerns of the Club shall be conducted by the Committee, in whom shall be vested the power of adopting any measures relative to its Funds, that may appear most conducive to the benefit of the Club; but no outlay on a large scale shall take place without the sanction of a General Meeting of the Committee.

11. The appointment of all Retainers and Servants, and of their Salaries, shall rest with the Committee.

RULE IX.

1. A General Meeting of Subscribers shall be held annually on the first Wednesday in May, at 11 A. M., for the purpose of receiving from the Committee a Report and Abstract of the accounts and concerns of the Club for the preceding year, together with an estimate of the receipts and disbursements for the current year, which Report and Estimate shall be printed and circulated for the general information of Members.

2. Extraordinary General Meetings of Subscribers shall be convened by the President of the Committee, at the written requisition of any nine Members of the Club, giving 14 days' notice. The requisition must state the subject to be laid before such General Meeting of Subscribers, and must be hung up in the Club House signed by the appellant members for the above-mentioned 14 days, and no subject shall be discussed at such Meeting save that specified in the written requisition.

3. No new Rule, or alteration of a Rule, shall be made without the sanction of a majority of two-thirds of an extraordinary General Meeting of Subscribers, composed of not less than 20 Members.

RULE X.

1. The Club House shall be opened for the reception of Members at 6 o'clock in the morning, and closed at 12 o'clock at night, after which hour the lights in the public rooms shall be extinguished, no refreshment shall be furnished, and no game commenced.

2. Accommodation shall be provided in the Club House for Members requiring it, subject to the following restrictions:

3. No Member shall be allowed to occupy bed-rooms for a longer time than one month. No Resident Members shall be allowed to occupy bed-rooms to the exclusion of Non-Resident Members.

4. Members occupying rooms at the Club House shall be subject to a separate charge on that account, to be regulated by the Committee.

5. Besides sleeping apartments, the Club House shall comprize—

Reading and dining rooms,
Billiard and card rooms,
A Racket Court.

6. Any defect or fault that may be found with a dinner is to be written on the back of the bill, and signed by the Member complaining, which bill

and fault will be considered on settling the accounts; and any inattention, or improper conduct on the part of the servants, is to be stated in writing, to be laid before the Committee.

7. The prices of the wines and all other charges shall be regulated from time to time by the Committee, and written up in the dining rooms.

8. At the close of the day every expense incurred shall either be paid, or acknowledged to be due, by the initials of the party concerned, on the bill being presented to him; and all accounts shall be settled at the end of each week, or before leaving the house.

RULE XI.

Any Member of the Club who, after being duly warned, shall suffer the payments of his monthly subscriptions or instalments of donation to be a longer time in arrears than six months, shall pay "double" as a forfeit to the Club, or cease to be a Member.

RULE XII.

No Member shall take away from the Club on any pretence whatever any Newspaper, Pamphlet, Book, or other article, the property of the Institution, under the penalty of expulsion.

RULE XIII.

No Member shall on any account bring a Dog within the precincts of the Club.

RULE XIV.

No Gambling shall be allowed at the Club.

RULE XV.

No play of any kind shall be allowed on Sundays under penalty of expulsion.

RULE XVI.

Any Member quitting the Presidency without settling his accounts with the Steward prior to his departure, shall render himself liable to expulsion.

T. J. TAYLOR,
Secretary.

Madras Club House; October 3rd, 1832.

Ordinary rates of Charges.

	Rs.	*As.*		*Rs.*	*As.*
Dinner, ...	2	0	Bottle of Soda-water, ...	0	6
Bottle of Sherry, ...	2	12	A Loaf of Bread, ...	0	1½
Claret, No. 1,....................	3	0	Lodging, ...	1	0
Ditto, No. 2,....................	2	6	Coffee, Tea, Toast, &c.........	0	12
Lights,........................	0	5	Sandwiches,..................	0	4
Cup of Coffee, ...	0	3			

ORDINANCES OF COMMITTEE

Passed under Provision of Regulations VIII. and X. *for the internal management of the Club.*

1. No smoking shall be allowed in the Club House or in any of the sleeping apartments adjoining.

II. No horses or conveyances shall be allowed to be picketted or kept within the compound.

III. As *Public* servants of all descriptions are attached to the Club, the number of private servants belonging to Members occupying apartments in the Club shall be restricted to two.

IV. No servant of the Club shall be struck, *abused,* or in any way punished by the Members; but in the event of any fault being found it is to be stated in writing to the Secretary, who will take measures for correcting it, and report the same for the satisfaction of the Members complaining.

V. No Member shall give to any servant of the establishment any sum of money or gratuity upon any pretence whatever, and any servant convicted of having received such money or gratuity shall be forthwith discharged.

VI. No stranger shall be admitted into the Public Rooms of the Club House.

VII. No tent shall be pitched or kept within the Club compound.

VIII. The charges for Members occupying rooms in the Club House have been established as follows :

For a single night	½	Rupee.
For one week	2	Rupees.
For two weeks	4	Rupees.
For three weeks	6	Rupees.
For all in excess of 3 weeks or 1 month.	8	Rupees.

IX. All breakage of plates or glass-ware, or injury to any of the Club property, to be paid for at prime cost by the person committing it.

X. The following schedule of charges for dinners, tiffin, and breakfast, have been established, and are directed to be hung up in each of the rooms of the house for general information.

Ordinary Charges for

	RS.	AS.
Breakfast	0	12
Tiffin	0	12
Ditto with Fruit	1	0
Dinner with Fruit	2	0
Ditto plain	1	8
Charges for Dinner when not ordered before 10 *o'clock in the morning.*		
Dinner with Fruit	2	8
Dinner plain	2	0

XI. In the event of large private parties at the Club House, Members will receive from the Steward the Bill of Charges, and in the event of its being deemed exorbitant will bring the charge to the consideration of the Committee through the Secretary.

XII. A House Dinner shall be prepared every Wednesday evening at half-past 7 o'clock, and it is expected that Members desirous of attending these parties will send their names to the Steward on or before the evening of the preceding Tuesday.

XIII. The charge for a Rubber at Billiards, shall be 1 anna, and when the Rooms are lighted, 2 annas; 8 annas shall be the fine for a Love Game, 10 pagodas for the first cut of the cloth, 5 pagodas for the second, and 3 pagodas for every succeeding cut of the cloth.

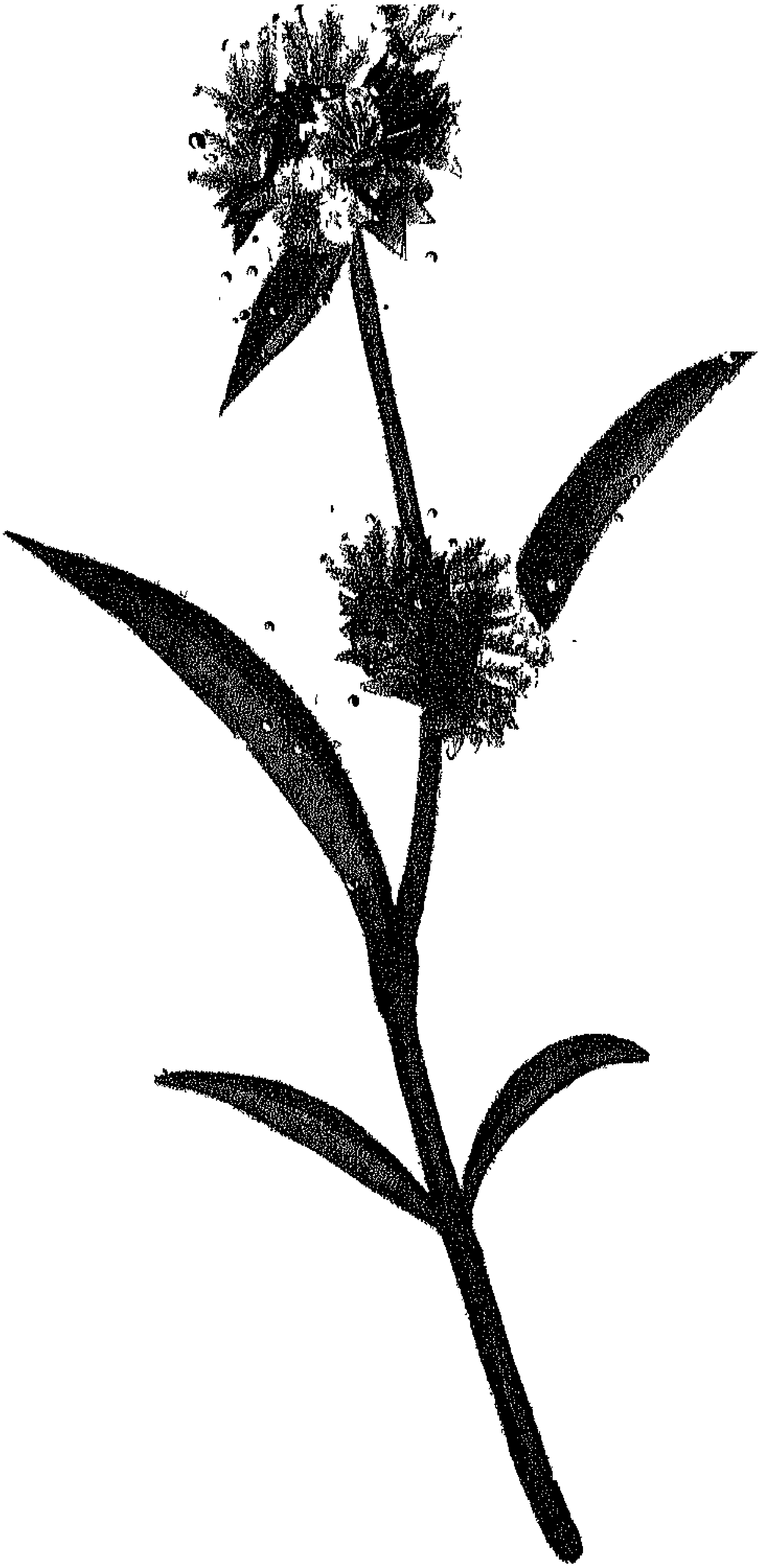
XIV. As the lights are only furnished for the public rooms, Members dining in the private rooms will be charged on that account, 5 annas for the larger dining room, and 4 annas for each of the other rooms.

XV. In order to prevent the bill collectors at the Presidency from being subjected to unnecessary labour or detention, it has been resolved that whenever any bill of the Club is presented for payment and not immediately paid, a fine of eight annas shall be added to the bill, such fine being continually added every successive time the bill is presented for payment.

XVI. Great inconvenience having resulted from the non-observance of Rule X. which directs the settlement of the accounts at the end of each week or before leaving the house, the Steward is therefore peremptorily prohibited from furnishing supplies to any Member who may not have settled his account up to the preceding Monday.

T. J. TAYLOR,
Secretary.

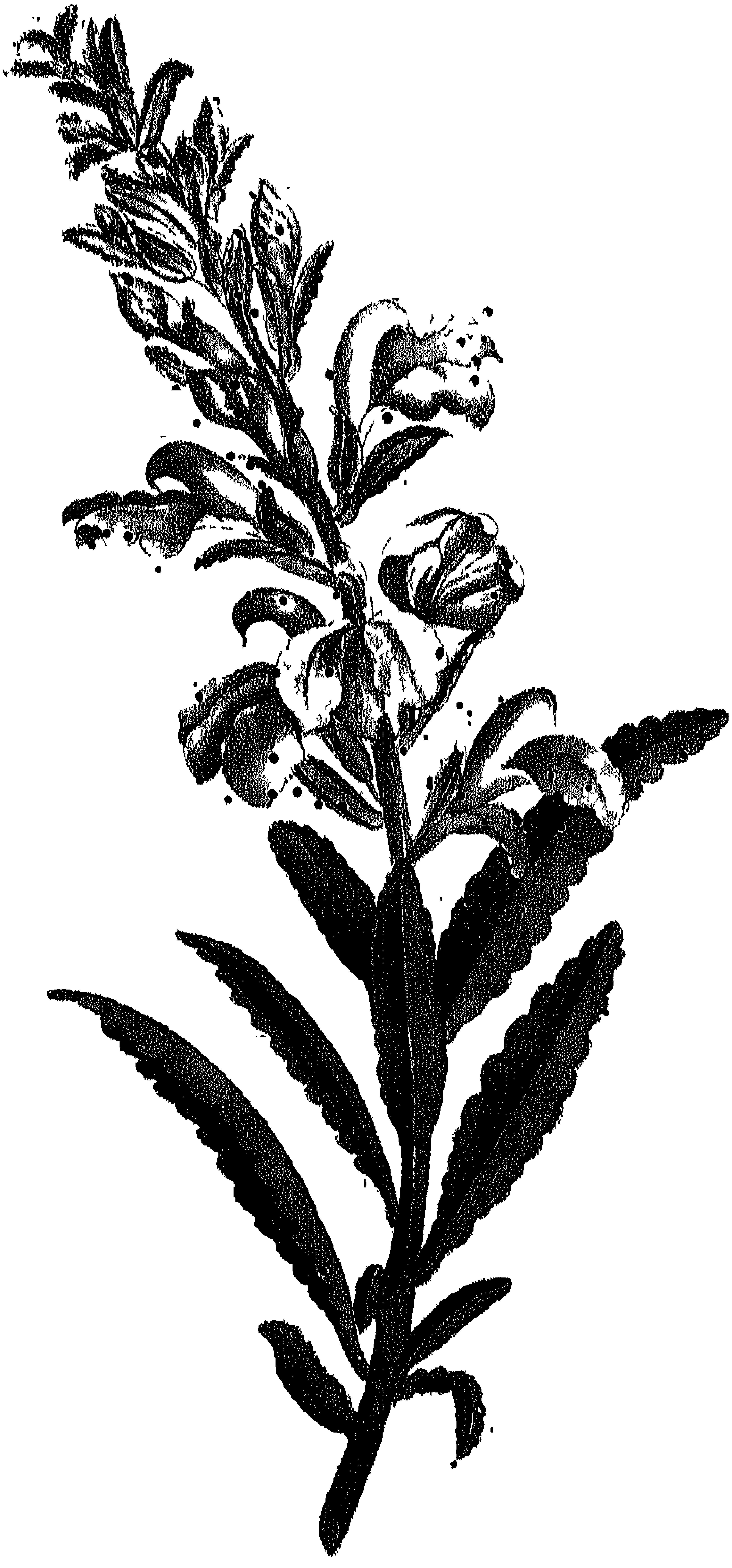
Madras Club House; October 2nd, 1832.



Drawn from Nature by Mrs P

J.D. Iassen lith.

Commelinea



Drawn from Nature by M. I. P.

J B Passin lith.

Pedicularis

IMPERIAL
LIBRARY

No. VIII.

A List of Plants gathered on the Neilgherries, particularly in the environs of Ootacamund. By the Rev. Mr. Schmid.

Monandria Monogynia.

1.—Hedychium ? ? According to Persoon's "*Systema*," it ranks next to *Maranta.*

Diandria Monogynia.

2-5.—Jasminum 1, very similar to Jasminum hirsutum, (See Edwards' Botanical Register, vol. i. p. 18.)
  2, very similar to the above, but leaves very soft, hairy.
  3, leaves smooth, small shrub. B. M. vol.
  4, similar to Jasminum revolutum, Bot. Reg. vol. iii. p. 176, and to humile, Bot. Reg. vol. viii. p. 350.
6-8.—Phillyrea, 3 species ; one very similar to Ph. paniculata.
9.—Circæa, most undoubtedly a new species. Never higher than 3 inches.
10, 11.—Paederota ? minima, and another larger species.
12.—Gratiola.
13-15.—Utricularia cœrulea ?
  2, lutea, and a third larger blue species.
16-25.—Justicia, 10 species at least.
26-28.—Tidoo, native name of a large forest-tree ; 3 species, ranks in Persoon's system next to *Lithophila.*

Diandria Trigynia.

29-32.—Piper ; and 3 species of Peperomia.

Triandria Monogynia.

33-35.—Valeriana ; 3 if not 4 species.
36-41.—Commelina ; 5-6 species, 2-3 of them most probably new ; the others have not been examined.
42, 43.—Sonerila, 2 species ; differing from those in Roxburgh's Flora.
44.—Xyris ? ? a new genus with a nectary ; Xyris has none.
45.—A tree, *Kanushoo* in the language of the original mountaineers.

Tetrandria Monogynia.

46.—Dipsacus, undoubtedly new.
47, 48.—Galium, 2 species.
49-51.—Hedyotis Lechenaultii, and 2 other shrubby species.
52-55.—Hedyotis (or Asperula ?) 4 herbaceous species.
56.—A shrub, ranking next to Callicarpa.
57.—Plantago, perhaps 2 species.
58-60.—A new genus ranking next to Bartonia ; 2 or 3 species.
61.—Erel, the native name of a large forest-tree with beautiful red flowers.
62, 63.—Oldenlandia biflora ? and another species.
64.—Elaeagnus, new species, similar to Orientalis.
65, 66.—Blackburnia ? 2 species.

Pentandria Monogynia.

67.—Myosotis Lappula ?

68.—Lysimachia Clementsoniana, and another plant, which may perhaps be Lysimachia? atropurpurea.

70.—Anagallis arvensis, has probably come hither with seeds from Europe.

71-73.—Convolvulus, 3 species.

74.—Ipomoea. Besides a great variety of Convolvulaceæ on the ghauts.

75-83.—Loranthus Lechenaultii, and 8 other species.

84.—Thesium humile, or squarrosum.

85-86.—Lonicera Lechenaultii, and another species.

87-88.—Verbascum Blattaria? and another species.

89, 90.—Datura Stramonium? and another species, new.

91, 92.—Physalis peruviana? and a procumbent dwarf species.

93-100.—Solanum nigrum? and *at least* 7 species more.

101, 102.—Coffea? 2 species.

103-105.—Baeobotrys, 3 species.

106.—Tectona, down the ghaut.

107, 108.—Rhamnus, more than 2 species.

109, 110.—A shrub, called wild orange, ranking next to Toddalia; 2 species.

111-113.—A new genus, the flower presents a remarkable middle link between Hedera and Vitis. At least 3 species; trees.

114.—Euonymus; large tree.

115.—Kongee, native name of a tree.

116.—Mountain Parijipatily, native name of another tree.

117-119.—Viola, 3 species.

120-125.—Impatiens; 6 species; one approaching to Chinensis, another to Cornuta.

126-127.—Achyranthes aspera (towards the foot of the hills), and another species.

128-131.—Celosia or Illecebrum; 4 species at least.

132.—Carissa spinarum.

Pentandria Digynia.

133, 134.—Asclepias, 2 species.

135, 136.—Apocynum? 2 species.

137.—Ceropegia? with an eatable bulb; probably the typus of a new genus.

138, 139.—Chenopodium; two species at least; viz. ambrosioides? and hybridum? a third near the foot of the hills, viz. maritimum?

140, 141.—Gentiana, one species; quite an alpine plant, the other with one pistil.

142-145.—Sanicula? 2 of the species with not umbellate flowers.

146-148.—Bupleurum falcatum? baldense? an fruticosum?

149.—Caucalis Anthriscus? not indigenous.

150-153.—Four other Umbellatæ, at least.

Pentandria Trigynia.

156, 157.—Viburnum, one perhaps laeve, the other I would call primuliflorum.

Pentandria Tetragynia.

158.—Parnassia, new, with 3 pistils

Pentandria Pentagynia.

159.—Linum.

160, 161.—Drosera, both species new; one very similar to Drosera rotundifolia, but without nerves.

Hexandria Monogynia.

162-166.—Tradescantia, 5 species.

167.—Lilium.

168.—Curculigo.

169, 170.—Asparagus; 2, if not 3 species.

171.—Ophiopogon nilagiricus (Nobis) ranks next to Convallaria japonica.

172.—Fritillaria.

173.—Ornithogalum?

174.—Allium, I saw only the onion of it.

175, 176.—Mahonia (Berberis); 2 new species.

177.—Bambusa; perhaps 2 new species.

Hexandria Trigynia.

178.—Rumex acutus, probably not indigenous.

Octandria Monogynia.

179, 180.—Oenothera biennis (not indigenous), and another species at the foot of the hills.

181.—Dodonæa, a willow-leaved new species.

Octandria Trigynia.

182-187.—Polygonum, 6 species.

Octandria Tetragynia.

188.—Calanchoè.

Enneandria Monogynia.

189-191.—Laurus, three species wild, and a fourth cultivated at Dimhutty.

Decandria Monogynia.

192.—Sophora glauca (De Candolle).

193-197.—Cassia, 5 species, at least.

198.—Tribulus lanuginosus, towards the foot of the hills.

199-201.—Melastoma, 3 species, one of which comes nearest to Rhexia, and one would, according to Persoon, be a Merianía.

202.—Rhododendron arboreum?

203, 204.—Vaccinium, 2, perhaps 3, species.

205.—Arbutus.

Decandria Trigynia.

206.—Silene, similar to Armeria, probably not indigenous.

207.—Stellaria.

208.—Arenaria.

209, 210.—Oxalis sensitiva? and a new species similar to Oxalis repens.

211.—Cerastium viscosum?

212.—Spergula; perhaps not indigenous.

Dodecandria Monogynia.

213, 214.—Triumfetta Bartramia, and another species.

Dodecandria Trigynia.

215-217.—Euphorbia, 3 species.

Icosandria Monogynia.

218.—Seepoo, native name of a tree.
219.—Kemmaingo, native name of another tree.
220.—Myrtus tomentosa, or rather Mespilus monogyna.
221-224.—Calyptranthus? four species.

Icosandria Digynia.

225.—Crataegus, very similar in appearance to Mespilus Cotoneaster.
226.—Sorbus, Tampattan, native name, and several other species of Sorbus or Crataegus.

Icosandria Polygynia.

227, 228.—Rosa, two new species.
229-231.—Rubus, three new species.
232, 233.—Fragaria indica and collina.
234-236.—Potentilla, 3 species.

Polyandria Monogynia.

237.—Elaeocarpus.

Polyandria Polygynia.

238.—Magnolia, if not a new genus.
239.—Anemone.
240, 241.—Clematis, two species.
242.—Thalictrum.
243-245.—Ranunculus, 3 species.

Didynamia Gymnospermia.

246.—Ajuga?
247.—Teucrium.
248-250.—Satureja, 3 species.
251.—Mentha, one, perhaps two, species.
252-258.—Leucas (Phlomis), seven species.
259.—Stachys, very similar to Stachys arvensis and annua.
260.—Thymus.
261.—One or two plants participating of the characters of Plectranthus and Barbula.
262.—A plant ranking next to Dentidia.
263, 264.—Scutellaria, 2 species, new.
265.—Prunella, new species. Before examining it, I long took it for granted to be grandiflora.

Didynamia Angiospermia.

266.—Buchnera asiatica, but probably a new species.
267-269.—Pedicularis, three new species.
270.—Gerardia delphinifolia.
271.—Orontium, very similar in appearance to Antirrhinum minus.
272, 273.—Ruellia, 2 or more species, one doubtless new.

274.—Barleria strigosa ?

275,276.—Two or more undefined plants of this class.

Tetradynamia Siliculosa.

277.—Thlaspi Bursa-pastoris.

Tetradynamia Siliquosa.

278-280.—Cardamine, two species.

281.—Arabis ?

282.—Brassica orientalis.

283-386.—I have *observed at least four* other Siliquosae.

Monadelphia Tetrandria.

287.—A shrubby climber, with orange-coloured, [illegible]petalous flowers, the stamens of which cleave as much together as those of many Solana or of the Lobelia.

Monadelphia Pentandria.

288-290.—Lobelia, 3 species. One of them I suppose to be the *triangulata,* a *name which I found written with pencil in Persoon's Systema, which* a friend had lent me; the second species is one of the largest and highest, and the third species, one of the smaller herbaceous plants on the hills.

Monadelphia Decandria.

291,292.—Geranium, 2 species. One comes near to Columbium, the other has more the habitus of Pelargonium.

293-303.—Malva rotundifolia (perhaps not indigenous,) and *at least* 10 Malvaceae more.

Diadelphia Hexandria.

304.—Fumaria officinalis, most probably not indigenous.

Diadelphia Octandria.

305.—Polygala.

306.—A shrub with a Polygala-flower; probably a new genus, unless we would call it Securidaca spuria.

Diadelphia Decandria.

307-311.—Crotalaria, 5 species at least.

312.—Cytisus, similar to Laburnum.

313.—Indigofera.

314-319.—Six other Leguminosae, *at least.*

Polyadelphia Polyandria.

320-322.—Hypericum, 3 species; one similar to Kalmianum.

Syngenesia Aequalis.

323-325.—Sonchus oleraceus, and 2 other species.

326.—Lactuca.

327.—Prenanthes.

328.—Leontodon.

329.—Hieracium, according to its habitus, but according to the general characters rather an Apargia.

330.—Carduus, *certainly a new* species.

331.—Bidens.
332, 333.—Cacalia, 2 species.
3[illegible].—Santolina.

Syngenesia Superflua.

335.—Tanacetum.
336, 337.—Artemisia.
338.—Sigesbeckia orientalis?
339, 340.—Erigeron, 2 species.
341-345.—Senecio vulgaris (not indigenous, but now pretty common), and at least [illegible] species more.
346.—A purple-flowered plant, similar to Senecio vulgaris, but with a simple c[illegible]p.
347.—Inula.
348-353.—Gnaphalium, 6 species.

Syngenesia Necessaria.

354.—Filago.
355-357.—Conyza, 3 species.
358.—Rudbeckia?
359.—Centaurea?
360-362.—Three species of a new genus, as I suppose; many more female flowers than males, and the former without a corolla.

Gynandria.

363-382.—I have as yet found 19 Orchideae, of very diversified construction, some very pretty. About half of them are parasitical on trees, and some on rocks.
383.—Aristolochia, [illegible] species.

Monoecia Monandria.

384, 385.—Zannichellia palustris, and another species with naked seed, and smaller.
386.—Arum. All the smaller specimens have invariably only stamens, the larger ones only pistils. Amongst the great number of flowers which I examined, I found only one instance of an hermaphrodite flower.
387.—Ficus, one species.

Monoecia Triandria.

388, 389.—Carex, two, if not more ; or new genera.
390.—Two species of a shrub, having the habitus of a Phyllanthus, with the fructification approaching to that of Tragia.
391.—Tragia, a new species, next to Tr. indica.
392.—A shrub which seems to be polygamous ; if monoecous, next to Hernandia ; if an hermaphrodite, next to Rumphia or Comocladia.

Monoecia Tetrandria.

393.—A water-plant with the habitus of Myriophyllum.
39[illegible]-401.—Urtica. Eight species; two or three of which are burning.
40[illegible], 403.—Parietaria, 2 species.
4[illegible].—Morus.

Monoecia Pentandria.

405, 406.—Amaranthus tristis? [illegible] spinosus?

Monoecia Octandria.

407, 408.—Peri[illegible]y, native name, is said to grow also in the low country and to be medicinal; 2 species of a genus which is not enumerated in Persoon.

Monoecia Monadelphia.

409.—Phyllanthus, towards the foot of the hills.

410.—Croton.

411.—Ricinus communis.

412.—A tree; 3-5 pistils.

413-417.—Bryonia and 4-5 other Cucurbitaceæ.

Dioecia Diandria.

418.—Salix. The male flowers I have not yet found in the tree.

Dioecia Triandria.

419, 420.—Viscum; 2 species, neither of which is described, as far as I can discover, in Dr. Roxburgh's Flora Indica.

Dioecia Hexandria.

421.—Phœnix?

422-421.—A climber, at least 3 species; not enumerated in Persoon.

Dioecia Dodecandria.

[illegible]—Villagadoo, native name of a large shrub or small tree; 15 stamens invariably. Perhaps 2 species.

Dioecia Monadelphia.

426-428.—Two species of a Phallus-like plant; perhaps related to Rafflesia. Parasitical on the root of trees, as it appears to me. Difficult to be found.

Cryptogamia.

429.—Equisetum, 1, if not 2 species; I have found as yet the flower of only one.

430, 431.—Lycopodium, 2 species.

432.—Osmunda.

433—Ophioglossum.

434-439.—Jungermania; more than 6 species.

440.—An articulated parasite, if not a Viscum; I have not yet succeeded in discovering the flower, although it has seed similar to the two other species of Viscum.

441.—Fontinalis.

442.—Marchantia.

443-449.—Polypodium, 11 species.

450-452.—Aspidium, 3 species.

453-464.—Asplenium, 7 species.

465-468.—Pteris, 4 species.

469, 470.—Adiantum, 3 species.

471.—Acrostichum.

Lichenes and Musci a great variety; one Boletus and some other Fungi. I have observed one Conferva, and a Polypus, scarcely to be distinguish.

ed from a water-plant; the flower-like animalcule becomes, when growing old, *incrustated with the house of a snail. It is found in water-brooks.*

P. S.—My researches have been as yet confined almost entirely to the *mere environs of Ootacamund*. The sides of the hills *towards the foot*, in the deeper valleys, contain a great variety of purely Asiatic species and genera; but my other engagements and ever want of the necessary books, have prevented my examining and classifying them. I have therefore not enumerated here a great number of plants, including all the grasses, which I have actually collected.

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